E-MRS

European Materials Research Society

# Spring Meeting 2022

May 30 | June 3

Virtual Conference

www.european-mrs.com

# CONFERENCE CHAIRS

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# E-MRS 2022
# PLENARY SESSIONS

**Monday 30 May, 2022 (13:00 - 13:45)**
**ERC Individual and Synergy Grants**

## Christine Courillon

Research Program Agent for "Synthetic Chemistry and Materials"
ERC Executive Agency
Place Rogier, 16
B-1049 Brussels, Belgium

**Tuesday 31 May, 2022 (13:45 - 14:45)**
**Visualising patterning and crystal growth on 2D materials using in situ electron microscopy**

## Frances M. Ross

Department of Materials Science and Engineering
Massachusetts Institute of Technology
Cambridge, Massachusetts, USA

**Wednesday 1 June, 2022 (13:45 - 14:45)**
**CO2 - Decarbonisation & CO2 as Future Feedstock**

## Dr. Armin Günther

Director New Technologies & Energy Transition
Air Liquide Global E&C Solutions

**Wednesday 1 June, 2022 (18:00 - 18:30)**
**2022 E-MRS EU-40 Materials Prize Presentation**
**The Versatility of Perovskite Materials for Optoelectronics**

## Prof. Michael Saliba

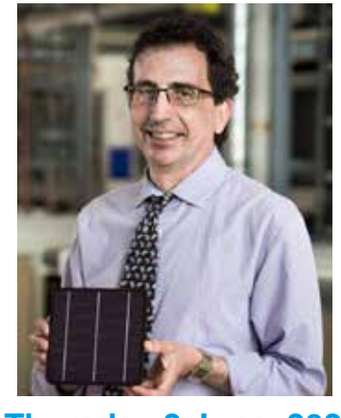
Institute for Photovoltaics (ipv) University of Stuttgart,
and Research Center Jüllich, Germany

**Wednesday 1 June, 2022 (18:30 - 19:00)**
**2022 MRS Mid-Career Researcher Award Presentation**

Designing biomaterials to repair the body and detect diseases earlier

## Prof Molly M Stevens

Imperial College London
U.K.



**Thursday 2 June, 2022 (13:45 - 14:45)**
**Accelerating the clean energy transition with materials innovation**

## Dr Chris Case

Chief Technology Officer
Oxford PV
U.K.

# SUMMARY TIMETABLES

# SUMMARY TIMETABLE MONDAY MAY 30

| | | MONDAY MAY 30 | | | | | |
|---|---|---|---|---|---|---|---|
| | | MORNING | | | AFTERNOON | | |
| | **NANOELECTRONIC MATERIALS AND DEVICES** | | | | | | |
| A | Advanced carbon materials | **A.1:** Highlights | **A.2:** Engineering of Diamond Films | PLENARY SESSION A | **A3:** Nanodiamond and Diamond Core Shells | **A4:** Graphene-based Materials | |
| B | Ultra-doped semiconductors by non-equilibrium processing for electronic, photonic and spintronic applications | **B1:** Hyperdoped Ge | **B2:** GeSn | | **B3:** Optical hyperdoping and alloying | **B4:** Advanced characterization techniques | |
| C | Semiconductor Nanostructures Towards Opto-Electronic and Photonic Device Applications VIII | **C1:** Synthesis and Optical Properties I | **C2:** Nanoparticles and Growth | | **C3:** Optical Properties and Defect Studies in Nanostructures | **C4:** Synthesis and Optical Study of Nanowires | **C5:** Advanced Spectroscopy of Nanostructures |
| D1 | Materials for Nanoelectronics and Nanophotonics | **D1.1**: Plasmonics and SERS | **D1.2:** SERS Sensing | | **D1.3:** Perovskites QDs | **D1.4:** Thin Flims Nanotechnology | |
| D2 | Materials for Nanoelectronics and Nanophotonics | **D2.1:** From 0D to 3D Nanomaterials II | **D2.2:** From 0D to 3D Nanomaterials II | | **D2.3:** Functional Nanostructured Materials | **D2.4:** Functional Nanostructured Materials | |
| E | Adaptive Materials and Devices for Brain-inspired Electronics | **E1:** Oxide-based Devices I | **E2:** Organic and Halides I | | **E3:** Organic and Halides II | **E4**: Organic and Halides III | **E5:** Neuromorphic Systems I |
| | **ENERGY MATERIALS** | | | | | | |
| F | Advances and Enhanced Functionalities of Anion-controlled New Inorganic Materials - ANIM 4 | | | | | | |
| G | Materials for Sustainable Energy Technologies (M-SET) | **G.E:** Electrodes | **G.E:** Electrodes II | | **G.PER:** Perovskites | **G.PER:** Perovskites II | **G:** Posters |
| H | 2D materials for Energy Storage : Batteries, super Capacitor, Solar Cells, Thermoelectric | **H.1:** Session 1 | | | | **H.2:** Session 2 | **H.3:** Posters 3 |
| I | Sustainable Approaches for Renewable Energy Conversion to Fuels and Chemicals | **I.1:** Artificial Photosynthesis | **I.2:** Artificial Photosynthesis | | **I.3:** Water Decontamination and New Catalists | **I.P1:** Posters | |
| J | Future electrochemical energy storage materials: from nanoscience to device integration and real environment application | **J.1:** Supercapacitor | | | **J.2:** Posters | | |
| K | Thin Film Chalcogenide Photovoltaic Materials | **K.1:** CIGS: Materials and Devices | **K.2:** CIGS: Materials and Devices II | | **K.3:** Tandems and Wide Bandgap CIGSe | **K.4:** Modelling | |
| | **FUNCTIONAL MATERIALS** | | | | | | |
| L | Chromogenic materials and devices | **L.1:** Session 1 | **L.2:** Session 2 | | **L.3:** Session 3 | **L.P1:** Posters | |
| M | Novel Materials for Radiation Detectors | | | | **M.1:** Session 1 | **M.2:** Session 2 | |
| N | Synthesis, Processing and Characterization of Nanoscale Multi Functional Oxide Films VIII | **N.1:** Growth of Thin Films | **N.2:** Advanced Characterization Techniques | | **N.3:** Ferroelectric Thin Films I | **N.4:** Ferroelectric Thin Films II | |
| O | Nano-engineered coatings and thin films: from design to applications | **O.1:** Hard Coatings and Coatings based on Metallic Glasses | | | **O.2:** Electrical and Optical Coatings | **O.3:** Poster Session 1 | |
| | **METHODS** | | | | | | |
| P | Cultural Heritage at risk : Perspectives on Technologies, Materials, Modelling and digitalization | | | | | | |
| Q | Fundamental and applicative research in laser-material interactions | **Q.1:** Pulsed Laser Deposition and Ablation-based Growth of Materials | **Q.2:** MAPLE, Nanoparticle Generation and Applications | | **Q.3:** Nanoparticle Generation and Applications | **Q:** Posters | |
| | **BIO- AND SOFT MATERIALS** | | | | | | |
| S | Polymer and hybrid thin films deposited from the vapor phase for functional (bio-devices) | **S.1:** Biomaterials part I | **S.2:** Biomaterials part II | | **S.3:** Anti-Fouling Coatings | **S.4:** Thin Films for Energy | |
| U | Advanced characterization of organic and hybrid materials | **U.1:** Doping Phenomena 1 | **U.2:** Advanced Microscopies 1 | | **U.3:** Doping Phenomena 2 | **U.4:** Photophysics | **U.5:** Posters |
| | **SATELLITE EVENTS** | | | | | | |
| V | New trends in advanced lithography and pattern transfer methods | | | | **V.1:** Oral Session 1 | **V.2:** Posters | |
| W | WiRE: Women in Renewable Energy | | | | | | |

# SUMMARY TIMETABLE TUESDAY MAY 31

| | | TUESDAY MAY 31 | | | | |
|---|---|---|---|---|---|---|
| | | MORNING | | | AFTERNOON | |
| | **NANOELECTRONIC MATERIALS AND DEVICES** | | | | | |
| A | Advanced carbon materials | **A5:** Carbon Dots | **A6:** Carbon Nanotubes | PLENARY SESSION B | **A:** Posters | |
| B | Ultra-doped semiconductors by non-equilibrium processing for electronic, photonic and spintronic applications | **B5:** Transition metal hyperdoped silicon | **B6:** Chalcogen hyperdoped silicon | | **B7:** Highly mismatch alloy | **B8:** Posters |
| C | Semiconductor Nanostructures Towards Opto-Electronic and Photonic Device Applications VIII | **C6:** Perovskite Nanostructures for Optoelectronics | **C7:** Nanomaterial for Optoelectronic Devices I | | **C8:** Nanomaterial for Optoelectronic Devices II | **C9:** Nanostructures for Lasing Application |
| D1 | Materials for Nanoelectronics and Nanophotonics | **D1.5:** Photonics | **D1.6:** Advanced Electronic Devices | | **D1.7:** 2D Materials and Devices | **D.1.8:** Electronic Materials |
| D2 | Materials for Nanoelectronics and Nanophotonics | **D2.5:** Functional Nanomaterials: Theory vs. Experiments | **D2.6:** Applications: Nanomaterials for Sensing | | **D2.7:** Synthesis of Metal-based Nanomaterials | **D2.8:** Halide Perovskites |
| E | Adaptive Materials and Devices for Brain-inspired Electronics | **E6:** Oxide-based Devices II | **E7:** Design for Energy-efficient Systems | | **E8:** Optical Methods and Systems | |
| | **ENERGY MATERIALS** | | | | | |
| F | Advances and Enhanced Functionalities of Anion-controlled New Inorganic Materials - ANIM 4 | | | | | |
| G | Materials for Sustainable Energy Technologies (M-SET) | **G.TH:** Thermoelectrics I | **G.TH:** Thermoelectrics II | | **G.C:** Catalysis | |
| H | 2D materials for Energy Storage : Batteries, super Capacitor, Solar Cells, Thermoelectric | **H.4:** Session 4 | | | **H.5:** Session 5 | |
| I | Sustainable Approaches for Renewable Energy Conversion to Fuels and Chemicals | **I.4:** CO2 Reduction I | **I.5:** CO2 Reduction II | | **I.6:** CO2 Reduction III | **I.7:** Characterization and Modeling I |
| J | Future electrochemical energy storage materials: from nanoscience to device integration and real environment application | **J.3:** Electrolytes for Batteries | | | **J.4:** Redox Flow Batteries | |
| K | Thin Film Chalcogenide Photovoltaic Materials | **K.5:** Simulations | **K.6:** Industrialisation | | **K7:** Posters - Kesterites and New Materials | |
| | **FUNCTIONAL MATERIALS** | | | | | |
| L | Chromogenic materials and devices | **L.4:** Session 4 | **L.5:** Session 5 | | **L.6:** Session 6 | |
| M | Novel Materials for Radiation Detectors | | | | **M.3:** Session 3 | **M.4:** Session 4 |
| N | Synthesis, Processing and Characterization of Nanoscale Multi Functional Oxide Films VIII | **N.5:** Functional Films | **N.6:** Functional Films II | | **N.7:** Poster Session 1 | |
| O | Nano-engineered coatings and thin films: from design to applications | **O.4:** Nitride and Oxide Functional Coatings | | | **O.5:** Electronics and Sensing Applications of Thin Films | |
| | **METHODS** | | | | | |
| P | Cultural Heritage at risk : Perspectives on Technologies, Materials, Modelling and digitalization | | | | | |
| Q | Fundamental and applicative research in laser-material interactions | **Q.4: LIPSS I** | **Q.5** | | **Q.6:** LIFT | |
| | **BIO- AND SOFT MATERIALS** | | | | | |
| S | Polymer and hybrid thin films deposited from the vapor phase for functional (bio-devices) | **S.5:** Biomaterials part III | **S.6:** Mechanism of Deposition / Deposition of Patterns | | **S.7:** Hybrid Thin Films | |
| U | Advanced characterization of organic and hybrid materials | **U.6:** Photophysics 2 | **U.7:** Spectroscopy 1 | | **U.8:** Structure and Properties 1 | **U.9:** Structure and Properties 2 |
| | **SATELLITE EVENTS** | | | | | |
| V | New trends in advanced lithography and pattern transfer methods | **V.3:** Oral Session 2 | | | | |
| W | WiRE: Women in Renewable Energy | | | | | |

# SUMMARY TIMETABLE WEDNESDAY JUNE 1

| | | WEDNESDAY JUNE 1 | | | | | |
|---|---|---|---|---|---|---|---|
| | | MORNING | | | AFTERNOON | | |
| | **NANOELECTRONIC MATERIALS AND DEVICES** | | | | | | |
| A | Advanced carbon materials | **A7:** Physical Properties of Carbon Materials | **A8:** Bioapplications I | PLENARY SESSION C | **A9:** Bioapplications II | | E-MRS EU-40 MATERIALS PRIZE & MRS MID-CAREER RESEARCH AWARD |
| B | Ultra-doped semiconductors by non-equilibrium processing for electronic, photonic and spintronic applications | **B9:** Future Devices | **B10**: Doping Nanocrystals | | **B11:** Defect engineering | | |
| C | Semiconductor Nanostructures Towards Opto-Electronic and Photonic Device Applications VIII | **C10:** Nanocrystals Doping | **C11:** Nanomaterial for Optoelectronic Devices III | | **C12:** Nanostructures for IR application | **C13:** Posters | |
| D1 | Materials for Nanoelectronics and Nanophotonics | **D1.9:** Carbon Nanomaterials | **D1.10:** Hybrid Materials | | **D1.11:** Energy Materials | **D1.12:** Energy Technologies | |
| D2 | Materials for Nanoelectronics and Nanophotonics | **D2.9:** Luminescent Nanomaterials | **D2.10:** Luminescent Nanomaterials II | | **D2.11:** Applications: Sensing and Luminescence | | |
| E | Adaptive Materials and Devices for Brain-inspired Electronics | **E10:** Nanowires and 2D Materials Systems | **E11:** Nanowires and 2D Materials Systems II | | **E12:** Theory and Simulations | **E13:** Theory and Simulations II | |
| | **ENERGY MATERIALS** | | | | | | |
| F | Advances and Enhanced Functionalities of Anion-controlled New Inorganic Materials - ANIM 4 | **F1:** Topochemical Synthesis | **F2:** Electronic Materials | | **F3:** Polar Oxy-halides | **F4:** Complex Mixed-Anion Materials | **F:** Posters |
| G | Materials for Sustainable Energy Technologies (M-SET) | **G.FC:** Fuel Cells | **G.FC:** Fuel Cells II | | **G.PH:** Photovoltaics | | |
| H | 2D materials for Energy Storage : Batteries, super Capacitor, Solar Cells, Thermoelectric | | | | | | |
| I | Sustainable Approaches for Renewable Energy Conversion to Fuels and Chemicals | **I8:** Bioconversion and Synthesis of Added Value Products I | **I9:** Bioconversion and Synthesis of Added Value Products II | | **I10:** Bioconversion and Synthesis of Added Value Products III | **I.P2:** Posters | |
| J | Future electrochemical energy storage materials: from nanoscience to device integration and real environment application | **J.5: Lithium Ion** Batteries | | | **J.5:** Posters | | |
| K | Thin Film Chalcogenide Photovoltaic Materials | **K8:** Kesterites | **K9:** Posters - CIGSe and Contact Materials | | **K10:** CdTe Alloys | **K11:** Posters - CIGSe and CdTe | |
| | **FUNCTIONAL MATERIALS** | | | | | | |
| L | Chromogenic materials and devices | | | | | | |
| M | Novel Materials for Radiation Detectors | | | | **M.5:** Session 5 | **M.6:** Session 6 | **M.7:** Posters |
| N | Synthesis, Processing and Characterization of Nanoscale Multi Functional Oxide Films VIII | **N.8:** Advanced Oxide Thin Films I | **N.9:** Advanced Oxide Thin Films II | | **N.10:** High Temperature Superconducting Thin Films | | |
| O | Nano-engineered coatings and thin films: from design to applications | **O.6:** Growth Strategies for Advanced Materials | | | **O.7:** Optical Coatings | **O.8:** Poster Session 2 | |
| | **METHODS** | | | | | | |
| P | Cultural Heritage at risk : Perspectives on Technologies, Materials, Modelling and digitalization | **PO:** Structural | **PO:** Preventive | | **PO:** Pigments | **PO:** Modern | **PP:** Posters |
| Q | Fundamental and applicative research in laser-material interactions | **Q.7:** Ultrashort Laser Processing | **Q.8:** Ultrashort Laser Processing: Theory and Applications | | **Q.9:** Laser Surface Structuring and Direct Writing | | |
| | **BIO- AND SOFT MATERIALS** | | | | | | |
| S | Polymer and hybrid thin films deposited from the vapor phase for functional (bio-devices) | **S.8:** Porous Thin Films and Multilayers | **S.9:** Sensors based on Thin Films | | **S.10:** Thin Films for (opto) electronics | | |
| U | Advanced characterization of organic and hybrid materials | **U.10:** Thermoelectrics | **U.11:** Advanced Devices | | **U.12:** Photophysics 3 | | |
| | **SATELLITE EVENTS** | | | | | | |
| V | New trends in advanced lithography and pattern transfer methods | | | | | | |
| W | WiRE: Women in Renewable Energy | | | | | | |

# SUMMARY TIMETABLE THURSDAY JUNE 2 & FRIDAY JUNE 3

| | | THURSDAY JUNE 2 | | | | | FRIDAY JUNE 3 | |
|---|---|---|---|---|---|---|---|---|
| | | MORNING | | | AFTERNOON | | MORNING | |
| | **NANOELECTRONIC MATERIALS AND DEVICES** | | | | | | | |
| A | Advanced carbon materials | **A10:** Spuercapacitors and Batteries | **A11:** Photo(electro) catalysis | PLENARY SESSION D | **A12:** Photo(electro) catalysis II | | **A13:** Electrochemistry and Sensing Applications | **A14:** Carbon Materials |
| B | Ultra-doped semiconductors by non-equilibrium processing for electronic, photonic and spintronic applications | | | | | | | |
| C | Semiconductor Nanostructures Towards Opto-Electronic and Photonic Device Applications VIII | **C14:** Synthesis and Optical Properties II | **C15:** Synthesis and Optical Properties III | | **C16:** Advanced Spectroscopy of Nanostructures II | **C17:** Nanostructures for Electronics | **C18:** Synthesis and Optical Properties III | **C19:** Advanced Nanostructures Characterization |
| D1 | Materials for Nanoelectronics and Nanophotonics | | | | | | | |
| D2 | Materials for Nanoelectronics and Nanophotonics | **D2.12:** Dielectric, Piezo- and Ferroelectric Nanomaterials I | **D2.13:** Dielectric, Piezo- and Ferroelectric Nanomaterials I | | **D2.14:** Nanostructured Films | | | |
| E | Adaptive Materials and Devices for Brain-inspired Electronics | **E14:** Ferroelectric Systems | **E15:** Ferroelectric Systems II | | **E16:** Mott Transitions and Volatile Switching Devices | **E17:** Mott Transitions and Volatile Switching Devices II | | |
| | **ENERGY MATERIALS** | | | | | | | |
| F | Advances and Enhanced Functionalities of Anion-controlled New Inorganic Materials - ANIM 4 | **F5:** Thin Films | **F6:** Theory / Photocatalysis | | **F7:** Energy Materials | **F8:** Tuning Oxynitride, Nitrides and OxyFluorides | | |
| G | Materials for Sustainable Energy Technologies (M-SET) | **G.B1:** Batteries | | | **G.B2:** Batteries | | **G.B3:** Batteries | |
| H | 2D materials for Energy Storage : Batteries, super Capacitor, Solar Cells, Thermoelectric | | | | | | | |
| I | Sustainable Approaches for Renewable Energy Conversion to Fuels and Chemicals | **I.11:** Water Splitting I | **I.12:** Water Splitting II | | **I.13:** Applications to Industry | **I.14:** Water Splitting III | **I.15:** Characterization and Modelling II | **I.16:** Water Splitting IV |
| J | Future electrochemical energy storage materials: from nanoscience to device integration and real environment application | **J.6:** Post Lithium-ion Batteries | | | | | | |
| K | Thin Film Chalcogenide Photovoltaic Materials | **K12:** Characterization | **K13:** New Materials | | **K14:** Contact Materials | | | |
| | **FUNCTIONAL MATERIALS** | | | | | | | |
| L | Chromogenic materials and devices | | | | | | | |
| M | Novel Materials for Radiation Detectors | | | | **M.8:** Session 8 | **M.9:** Session 9 | | |
| N | Synthesis, Processing and Characterization of Nanoscale Multi Functional Oxide Films VIII | **N.11:** 2D and Epitaxial Thin Films I | **N.12:** 2D and Epitaxial Thin Films II | | **N.13:** Transparent and Conductive Oxide Films I | **N.14:** Poster Session 2 | **N.15:** Transparent and Conductive Oxide Films II | **N.16:** Ferroelectric Thin Films III |
| O | Nano-engineered coatings and thin films: from design to applications | **O.9:** Fundamental Aspects of Thin Film Growth | | | **O.10:** Thin Film Growth and Apllications | | **O.11:** Thin Film Materials for Advanced Energy | |
| | **METHODS** | | | | | | | |
| P | Cultural Heritage at risk : Perspectives on Technologies, Materials, Modelling and digitalization | | | | | | | |
| Q | Fundamental and applicative research in laser-material interactions | **Q.10:** Laser-Material Synthesis | | | | | | |
| | **BIO- AND SOFT MATERIALS** | | | | | | | |
| S | Polymer and hybrid thin films deposited from the vapor phase for functional (bio-devices) | **S.11:** Functional Thin Films | | | | | | |
| U | Advanced characterization of organic and hybrid materials | **U.13:** Spectroscopy 2 | **U.14:** Advanced Microscopies 2 | | | | | |
| | **SATELLITE EVENTS** | | | | | | | |
| V | New trends in advanced lithography and pattern transfer methods | | | | | | | |
| W | WiRE: Women in Renewable Energy | **W.1:** Oral Session | | | **W.2:** Oral Session 2 | **W.3:** Poster Session | | |

# SYMPOSIA

# SYMPOSIUM A

## Nanoelectronic materials and devices

*Symposium Organizers :*

Akichika KUMATANI, Tokoku University

Hui-Ming CHENG, Institute of Metal Research, CAS

Jean-Charles ARNAULT, CEA NIMBE

Nianjun YANG, University of Siegen

Papers will be published in the journal «Carbon» (Elsevier).

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### Highlights : N. YANG, J.-C. ARNAULT

**09:00** INV **Research on 2D Graphdiyne: Review and progress** — A 1.1
Yurui Xue, Yuliang Li*
Institute of Chemistry Chinese Academy of Sciences

**09:30** INV **Spin Quantum Physics with Carbon Based Materials** — A 1.2
Jörg Wrachtrup
3rd Institute of Physics, Centre for Applied Quantum Technologies and IQST, University of Stuttgart, Germany

**10:00** INV **Graphene Nanostructures 3.0: Quantum Phenomena & Properties** — A 1.3
Feng, X. (1)(2)
(1) Faculty of Chemistry and Food Chemistry, Technical University Dresden, Germany (2) Department of Synthetic Materials and Functional Devices, Max Planck Institute of Microstructure Physics, Germany

**10:30** **Discussion**

**10:45** **Coffee**

### Engineering of Diamond Films : N. YANG, Y. LU

**11:00** INV **Nanomechanics of diamond and its deep elastic strain engineering** — A 2.1
Prof. Yang LU
Department of Mechanical Engineering, City University of Hong

**11:30** **CVD diamond film with nanodiamond seeding grown on GaN for effective thermal dissipation** — A 2.2
Liwen Sang, and Meiyong Liao
International Center for Materials Nanoarchitectonics, National Institute for Materials Science (NIMS), 1-1 Namiki, Tsukuba, Ibaraki 305-0044, Japan

**11:45** **Fabrication of Diamond Nanoneedle Arrays Containing High-Brightness Silicon-Vacancy Centers** — A 2.3
Jiaqi Lu, Bing Yang, Xin Jiang
Jiaqi Lu, School of Materials Science and Engineering, University of Science and Technology of China, Bing Yang, Institute of Metal Research, Chinese Academy of Sciences, Xin Jiang, University of Siegen, Institute of Metal Research, Chinese Academy of Sciences,

**12:00** **Tailored Adamantane derivatives as precursors to Nanodiamonds in mild Pressure and Temperature conditions** — A 2.4
Yves H. Geerts, Maxime Bonsir
Laboratory of Polymer Chemistry, Université Libre de Bruxelles, Boulevard du Triomphe, CP 206/1, Brussels, Belgium

**12:15** **Review on the Raman spectroscopy of boron-doped diamond** — A 2.5
V. Mortet, M. Davydova, M. Alam, A. Taylor, J. Pokorny
FZU – Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic

**12:30** **Discussion**

**12:45** **Lunch**



### Nanodiamond and Diamond Core Shells : J.-C. ARNAULT, M. LIAO

**14:00** INV **Efficient etching of diamond by oxygen annealing toward high-Q factor diamond MEMS resonators** — A 3.1
Yinling Chen1,2, Huanying Sun1, Liwen Sang1, Satoshi Koizumi1,Yasuo Koide1, Xiaoxi Liu2, Meiyong Liao1
1 National Institute for Materials Science, Japan 2 Shinshu University, Japan

**14:30** **Selective combustion of detonation nanodiamonds: a useful approach to evaluate the undesired metallic impurities** — A 3.3
Killian Henry1, Mélanie Emo1, Sébastien Diliberto1, Jean-Charles Arnault2, Hughes. A. Girard2, Valery Nesvizhevsky3, Brigitte Vigolo1, Marc Dubois4
1 Université de Lorraine, Institut Jean Lamour, UMR 7198, allée André Guinier 54000 Nancy, France , 2 NIMBE UMR CEA-CNRS 3685, Paris Saclay University, 91191 Gif sur Yvette, France , 3 Institut Max von Laue – Paul Langevin, 71 av. des Martyrs, F-38042 Grenoble, France , 4 Université Clermont Auvergne, CNRS, ICCF UMR 6296, 24 av. Blaise Pascal, F-63178 Aubière, France

**14:45** **High quality crystalline boron doped diamond growth on spherical monodisperse silica particles** — A 3.2
K.Henni (1), I. Stenger (2), J-S. Merot (3), F. Fossard (3), J. C. Arnault (1) and H. A. Girard (1)
(1) Université Paris-Saclay, CEA, CNRS, NIMBE, CEDEX, 91 191 Gif sur Yvette, France (2) Université Paris-Saclay, UVSQ, CNRS, GEMaC, 78000 Versailles, France (3) Université Paris-Saclay, ONERA-CNRS, Laboratoire d'Etude des Microstructures, BP 72, 92322, Châtillon, France

**15:00** **Colloidal stability of synthetic hydrogenated nanodiamonds in water** — A 3.4
L. Saoudi, H.A. Girard, J.C. Arnault
Université Paris-Saclay, CEA, CNRS, NIMBE, CEDEX, 91 191 Gif sur Yvette, France

**15:15** **Production of solvated electrons from nanostructured diamonds surface under visible light illumination** — A 3.5
Arsène Chemin, Peter Knittel, Igal Levine, Thomas Dittrich, Tristan Petit
Helmholtz-Zentrum Berlin für Materialen und Energie GmbH, Albert-Einstein-Str. 15, 12489 Berlin, Germany, Fraunhofer Institute for Applied Solid State Physics, Tullastraße 72, 79108 Freiburg, Germany, Helmholtz-Zentrum Berlin für Materialen und Energie GmbH, Albert-Einstein-Str. 15, 12489 Berlin, Germany, Helmholtz-Zentrum Berlin für Materialen und Energie GmbH, Albert-Einstein-Str. 15, 12489 Berlin, Germany, Helmholtz-Zentrum Berlin für Materialen und Energie GmbH, Albert-Einstein-Str. 15, 12489 Berlin, Germany,

**15:30** **Discussion**

**15:45** **Coffee**

### Graphene-based Materials : A. KUMATANI, H.-M. CHENG

**16:00** **Investigation of Multilayer Graphene Oxide Films Structure by NMR and XRD** — A 4.1
Panina, L.V., Efimova, O.S., Popova, A.N., Lyrshchikov, S.Yu., Ismagilov, Z.R.
Federal Research Center of Coal and Coal Chemistry SB RAS, Russia

**16:15** **Using multi-probe scanning tunnelling microscopy to selectively manipulate graphene** — A 4.2
Cobley, R.J.
Faculty of Science and Engineering, Swansea University, Swansea SA2 8PP UK.

**16:30** **Surface Porosity Adjustments of 3D-printed Graphene-based Aerogels** — A 4.3
Zhou, B.*(1), Chen, Z.(1), Cheng, Q.(2), Xiao, M.(1), Bae, G.(1), Liang, D.(2) & Hasan, T.(1)
(1) Cambridge Graphene Centre, University of Cambridge, Cambridge, CB3 0FA, UK (2) Department of Engineering, University of Cambridge, Cambridge, CB3 0FA, UK * lead presenter

**16:45** **Facile and Economical, Single-Step Single-chemical Method for Conversion of Palm Oil Fuel Ash Waste into Graphene Nanosheets** — A 4.4
Muhammad Ayub, Mohd Hafiz Dzarfan Othman, Mohd Zamri Mohd Yusop
Advanced Membrane Technology Research Centre (AMTEC), School of Chemical and Energy Engineering, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia

**17:00** **Tuning the oxygen content of reduced graphene oxide: comparing HI and NaBH4 chemical reduction processes** **A 4.5**
1. Wei Liu 2. Giorgio Speranza
1. MERLin, School of Chemistry, Edgeworth David Building, Level 2, The University of Sydney, Sydney, NSW 2006, Australia 2. Fondazione Bruno Kessler Sommarive str. 18 39123 Trento Italy

**17:15** **Adsorption of CO2 on Graphene-Based Materials Prepared by Physical and Chemical Activation Approaches** **A 4.6**
Rabita Mohd Firdaus (1, 2) A. Desforges (2) Mélanie Emo (2) A.R Mohamed (1) B. Vigolo (2)
1 School of Chemical Engineering, Engineering Campus, Universiti Sains Malaysia, 14300 Nibong Tebal, Seberang Perai Selatan, P. Pinang, Malaysia 2 Université de Lorraine,CNRS, IJL, 54000 Nancy, France

**17:30** **Discussion**



**Tuesday may 31**

## Carbon Dots : N. YANG, Y. CHI

**09:00** INV **Complete degradation of grassy carbon spheres into nanostructures** **A 5.1**
Yun Huang, Jie Chen, Jingcheng Zheng, Yuwu Chi
College of Chemistry, Fuzhou University

**09:30** **Fluorescence photobleaching and recovery kinetics of blue, green, red and white carbon nanodots probed by in situ spectroscopy** **A 5.2**
Terracina, A.* (1), Armano, A.(1), Meloni, M.(2), Panniello, A.(3), Minervini, G.(3)(4), Madonia, A.(3), Cannas, M.(1), Striccoli, M.(3), Malfatti, L.(2) & Messina, F.(1).
(1) Dipartimento di Fisica e Chimica, Università degli Studi di Palermo, Via Archirafi 36, 90123 Palermo, Italy, (2) Department of Chemistry and Pharmacy, Laboratory of Materials Science and Nanotechnology, CR-INSTM, University of Sassari, Via Vienna 2, 07100, Sassari, Italy, (3) CNR-IPCF-Bari Division, c/o Chemistry Department, and ‡Chemistry Department, University of Bari “Aldo Moro”, Via E. Orabona 4, 70126 Bari, Italy, (4) Department of Electrical and Information Engineering, Polytechnic of Bari, Via E. Orabona, 4, 70126 Bari, Italy. * lead presenter

**09:45** **Phosphorescence from Carbon Dots** **A 5.3**
L. Stagi, M. Poddighe, C.M. Carbonaro, L. Malfatti and P. Innocenzi
Department of Chemistry and Pharmacy, Laboratory of Materials Science and Nanotechnology, CR-INSTM, University of Sassari, Via Vienna 2, 07100, Sassari, Italy, Department of Biomedical Sciences, Viale San Pietro 43/B University of Sassari, Sassari 07100, Italy, Department of Physics, University of Cagliari, sp 8, km 0.700, 09042, Monserrato, Italy, Department of Biomedical Sciences, Viale San Pietro 43/B University of Sassari, Sassari 07100, Italy, Department of Biomedical Sciences, Viale San Pietro 43/B University of Sassari, Sassari 07100, Italy,

**10:00** **Insights into the Synthesis of Red-Emitting Carbon Dots** **A 5.4**
Madonia, A.*(1), Minervini, G.(1)(2), Comparelli, R.(1), Panniello, A.(1) & Striccoli, M.(1).
(1) CNR-IPCF-Bari Division, c/o Chemistry Department, University of Bari , Via E. Orabona 4, 70125 Bari, Italy, (2) Department of Electrical and Information Engineering, Polytechnic of Bari, Via E. Orabona, 4, 70125 Bari, Italy.

**10:15** **Resorcinol Synthesized Carbon Dots in Open Reactor: Investigation on Fluorescence and Photobleaching Mechanism** **A 5.5**
Minervini, G.*(1)(2)(3), Madonia, A.(3), , Carbonaro, C. M.(4), Mocci, F.(5), Sibillano, T.(6), Giannini, C.(6), Fanizza, E.(2)(3), Agostiano, A.(2)(3), Curri M. L.(2)(3), Striccoli, M.(3) & Panniello, A.(3)
(1)Department of Electrical and Information Engineering, Polytechnic of Bari, Via E. Orabona 4, Bari, 70126, Italy (2) Department of Chemistry, University of Bari “Aldo Moro”,Via Orabona 4, Bari, 70126, Italy (3)CNR-IPCF Bari Division, c/o Chemistry Department, University of Bari “Aldo Moro”, Via Orabona 4, Bari, 70126, Italy (4) Department of Physics, University of Cagliari, SP8, Monserrato, 09042, Italy (5) Department of Chemical and Geological Sciences, University of Cagliari, SP8, Monserrato, 09042, Italy (6)Institute of Crystallography (IC), CNR, Via Amendola 122, Bari, 70126, Italy

**10:30** **Discussion**

**10:45** **Coffee**

## Carbon Nanotubes : A. KUMATANI, H. NISHIHARA

**11:00** INV **Multi-functional nanoporous carbon based on single-walled graphene walls** **A 6.1**
Hirotomo Nishihara
Advanced Institute for Materials Research (WPI-AIMR), Tohoku University

**11:45** **Single-Walled Carbon Nanotubes Networks Embedded within Liquid Crystalline Mesophases of Cellulose Nanocrystals** **A 6.2**
David Attia 1, Evgenee Yekymov 1, Yulia Shmidov 1, Yael Levi-Kalisman 2, Orit Mendelson 3, Ronit Bitton 1,4 and Rachel Yerushalmi-Rozen 1,4 *
1. Department of Chemical Engineering, Ben-Gurion University of the Negev, 84105 Beer-Sheva, Israel, 2. The Center for Nanoscience and Nanotechnology, and The Institute of Life Sciences, The Hebrew University of Jerusalem, Jerusalem 9190401, Israel, 3. Department of Chemistry, Nuclear Research Center-Negev, Beer-Sheva 84190, Israel, 4. The Ilse Katz Institute for Nanoscience and Technology, Ben-Gurion University of the Negev, 84105 Beer-Sheva, Israel.

**12:00** **Optical properties of SWCNT membranes: towards new applications for study and imaging of single nanoparticles** **A 6.3**
Zhigunov D.M., Shilkin D.A., Kokareva N.G., Bessonov V.O., Dyakov S.A., Chermoshentsev D.A., Mkrtchyan A.A., Gladush Yu.G., Fedyanin A.A., Nasibulin A.G.
Zhigunov D.M., Dyakov S.A., Chermoshentsev D.A., Mkrtchyan A.A., Gladush Yu.G., Nasibulin A.G. ? Skolkovo Institute of Science and Technology, Moscow, Russia, Shilkin D.A., Kokareva N.G., Bessonov V.O., Fedyanin A.A. ? Faculty of Physics, M. V. Lomonosov Moscow State University, Moscow, Russia, Bessonov V.O. ? Frumkin Institute of Physical Chemistry and Electrochemistry, Russian Academy of Sciences, Russia, Chermoshentsev D.A. ? Moscow Institute of Physics and Technology, Russia, Nasibulin A.G. ? Department of Chemistry and Materials Science, Aalto University, Finland.

**12:15** **Non-covalent functionalization of Double-Walled Carbon Nanotubes to improve their electro co-deposition within copper** **A 6.4**
Mauricio Pavía, Mélanie Emo, Fahad Alnjiman, Jean-François Pierson, Emmanuel Flahaut, Brigitte Vigolo, Ewa Kazimierska
Université de Lorraine, CNRS, Institut Jean Lamour, F-54000 Nancy, France, Université de Lorraine, CNRS, Institut Jean Lamour, F-54000 Nancy, France, Université de Lorraine, CNRS, Institut Jean Lamour, F-54000 Nancy, France, Université de Lorraine, CNRS, Institut Jean Lamour, F-54000 Nancy, France, CIRIMAT, Université de Toulouse, CNRS, F-31062 Toulouse, France, Université de Lorraine, CNRS, Institut Jean Lamour, F-54000 Nancy, France, Swansea University, Energy Safety Research Institute (ESRI), SA1 8EN Swansea, Wales, UK.

**12:30** **Discussion**

**12:45** **Lunch and Plenary**

**15:00** **Coffee**

## 1 : N. YANG, J.-C. ARNAULT, A. KUMATANI, H.-M. CHENG

**15:30** **Tracking the oxidation processes of triclosan in the environmental samples by electrochemical studies at boron doped electrodes** **A P1.1**
Iwona Kaczmarzyk*(1), Paweł Jakóbczy(1), Paweł Rostkowski(2), Jacek Ryl(1), Robert Bogdanowicz(1)
(1) Gdansk University of Technology, Narutowicza 11/12, 80-233 Gdansk, Poland
(2) Norwegian Institute for Air Research, Instituttveien 18, 2007 Kjeller, Norway

**15:30** **Fabrication and activation of 3D printed poly(lactic acid) structures supplied with carbon fillers for electroanalytical appli** **A P1.2**
Mateusz Cieslik1*, Krzysztof Formela1, Robert Bogdanowicz1, Mariusz Banasiak1, Srinivasu Kunuku, and Jacek Ryl1
1 Gdansk University of Technology, Narutowicza 11/12, 80-233 Gdansk, Poland
*mateusz.cieslik@pg.edu.pl

**15:30** **Laser-Scribed Graphene Electrodes on Nail Polish for Electrochemical Sensing Applications** **A P1.3**
Na Zhang, Chengguo Hu*
College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, China

**15:30** **RPNSs/SWNTs network architecture based paper sensor array and analytical application** **A P1.5**
Lingbo Liu, Kangbing Wu*
Key Laboratory for Material Chemistry of Energy Conversion and Storage, Ministry of Education, School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology, Wuhan 430074, China

**15:30** **Electrochemically Functionalized Graphene for Highly-sensitive detection of Nitrofurazone** **A P1.6**
Jiaxi Yin, Kangbing Wu*
Hubei Key Laboratory of Bioinorganic Chemistry and Materia Medica, School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology, Wuhan 430074, China

**15:30** **Exfoliated preparation and sensing application of Ti3C2Tx MXenes by different quaternary ammonium hydroxide** **A P1.8**
Ling Lei, Kangbing Wu
Hubei Key Laboratory of Bioinorganic Chemistry and Materia Medica, School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology, Wuhan 430074, China.



**15:30** **Solvent-free Self-template Synthesis of Cobalt-Embedded Nitrogen-Rich Carbon 2D Nanosheets for Efficient Oxygen Reduction Reacti** **A P1.9**
Shuai Chen, Qingchao Xu, Haizhen Sun, Dongmei Huang, Xili Tong*
tongxili@sxicc.ac.cn, shuaichen@sxicc.ac.cn

**15:30** **MnOOH nanorods decorated expanded graphite toward enhanced electrochemical monitoring of metronidazole** **A P1.10**
Xiaomin Hu,a Yuanyuan Zhang,a Ting Zeng,a Qijin Wan,a Nianjun Yang,b
a School of Chemistry and Environmental Engineering, Key Laboratory of Green Chemical Engineering Process of Ministry of Education, Hubei Key Lab of Novel Reactor and Green Chemical Technology, Wuhan Institute of Technology, Wuhan 430073, China□ b Institute of Materials Engineering, University of Siegen, 57076 Siegen, Germany * Corresponding Author, * E-mail address: yyzhang@wit.edu.cn

**15:30** **Atomistic Insights into Electrochemical Metallization** **A P1.11**
Jad Jaafar
Imperial College London

**15:30** **A diamond/grapene/diamond electrode for waste water treatment** **A P1.12**
Yibao Wang,Fengxiang Guo,Mei Zhang,Lili Zhang,Guangsen Xia,,Xueyu,Zhang*,Zhigang Gai*,Xin Jiang
Faculty of Ocean Technology Sciences Qilu University of Technology (Shandong Academy of Sciences) Qingdao 266100, P. R. China

**15:30** **Graphene multilayers produced by magnetron sputtering technique** **A P1.13**
B. Bita1,2, F. Baiasu1,2, C.E.A. Grigorescu3 , S. Iordache3, A. Groza1
1 National Institute for Laser, Plasma and Radiation Physics, Magurele, 077125, Romania 2 University of Bucharest, Faculty of Physics, Magurele, 077125, Romania 3 National Institute of R&D for Optoelectronics, INOE 2000, 409 Atomistilor, 077125, Magurele, Jud. Ilfov, Romania

**15:30** **Enhanced capacitive deionization performance of activated carbon derived from sucrose with low content carbon nanotube additive** **A P1.14**
Plakantonaki, N. *(1, 2), Vagenas, M.(1), Todorova, N.(1), Giannakopoulou, T.(1), Karakassides, M.(2), Trapalis, C.(1)
(1) Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos", 15341, Greece (2) Department of Materials Science and Engineering, University of Ioannina, 45110, Greece * lead presenter

**15:30** **Laser-synthesised micro-structured MoS2 nanolayers** **A P1.15**
Salimon I.A * (1), Averchenko A.V. (1), Zharkova E. V. (1), Abbas O.A. (1), Lagoudakis P. G. (1), and Mailis S. (1)
(1) Skolkovo Institute of Science and Technology, Moscow, 121205, Russian Federation

**15:30** **PLD of ferroelectric HfO2 thin films** **A P1.16**
I.A. Bercea1, M. L. Ciurea2 , A.M. Lepadatu2, M. Dragoman3. M. Filipescu1, V. Ion1, A. Moldovan1, G. Dinescu1, V.A. Maraloiu2 , V.S. Teodorescu2, Maria Dinescu1*
1 National Institute for Laser, Plasma and Radiation Physics, Atomistilor 409, 77125 Magurele, Romania 2National Institute of Material Physics, Atomistilor 405 A, 77125 Magurele, Romania 3National Institute for Research and Development in Microtechnologies - IMT, Str. Erou Iancu Nicolae, Nr. 126 A, Voluntari, Ilfov, Romania

**15:30** **Green synthesis of paper-like nanohybrids: graphene oxide and carbon nanotubes decorated with silver nanoparticles** **A P1.18**
Rodríguez-Otamendi, D.I.*(1), Basiuk, V.A. (2), Rudolf, P. (1) & Basiuk, E.V. (3).
(1) Zernike Institute for Advanced Materials, University of Groningen, The Netherlands, (2) Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México, Mexico, (3) Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Mexico.

**15:30** **Carbon-based monoliths with improved thermal and mechanical properties for methane storage** **A P1.19**
Snezana Reljic, Manuel Martinez Escandell, Joaquin Silvestre-Albero
Laboratory of Advanced Materials, Department of Inorganic Chemistry, University of Alicante, Spain

**15:30** **Nanoscale Thermometry for Theranostic with Fluorescent Nanodiamonds** **A P1.20**
Yingke Wu, Md Noor A Alam, Priyadharshini Balasubramanian, Fedor Jelezko, Tanja Weil
Yingke Wu, Md Noor A Alam, Tanja Weil Max Planck Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany, Priyadharshini Balasubramanian, Fedor Jelezko Institute for Quantum Optics, Ulm University, Albert-Einstein-Allee 11, 89081 Ulm, Germany

**15:30** **Solvothermal synthesis of graphene oxide-lanthanide nanohybrids** **A P1.21**
Acevedo-Guzmán, D.A.*(1),(2), Basiuk, E.V.(1), Rudolf, P.(2) & Basiuk, V.A.(3).
(1)Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Mexico, (2)Zernike Institute for Advanced Materials, University of Groningen, The NetherlandsInstituto de Ciencias Nucleares, Universidad Nacional Autónoma de México, Mexico, (3)Instituto de Ciencias Nucleares, Universidad Autónoma de México, Mexico

**15:30** **Phosphorene-gold nanopartilces based aptasensor for the detection of bisphenol analogues in complicated environment** **A P1.22**
Siqi Wu, Siyao Liu, Guohua Zhao*
School of Chemical Science and Engineering, Tongji University

**15:30** **Boron-doped Diamond Anode Coupled High-index Co3O4 Cathode for Boosting Photoelectrochemical Degradation of Dimethyl Phthalates** **A P1.23**
Junzhuo Cai, Guohua Zhao
School of Chemical Science and Engineering, Shanghai Key Lab of Chemical Assessment and Sustainability, Tongji University, Shanghai 200092, China

**15:30** **Highly efficient and selective electrooxidation of Tetrahydroisoquinoline and simultaneous hydrogen production** **A P1.24**
Yanan Xie, Zhaoyu Zhou, Lingzhi Sun, Xun Pan, Guohua Zhao*
Yanan Xie, Zhaoyu Zhou, Lingzhi Sun, Xun Pan, Guohua Zhao* School of Chemical Science and Engineering Shanghai Key Lab of Chemical Assessment and Sustainability Tongji University Shanghai 200092, China

**15:30** **MOF-derived Fe-Ni bimetallic site catalysts for efficient electrocatalysis of NRR** **A P1.25**
Jie Sun, Weiqi Gao, Honghan Fei*, Guohua Zhao*
School of Chemical Science and Engineering, Shanghai Key Lab of Chemical Assessment and Sustainability, Tongji University, Shanghai 200092, People's Republic of China.

**15:30** **Coupling of Single-crystal Diamond Resonators with Various Interlayers for High-performance Magnetic Sensor** **A P1.26**
Zilong Zhang*, Liwen Sang, Yasuo Koide, Satoshi Koizumi and Meiyong Liao
National Institute for Materials Science, Japan

**15:30** **Green synthesis of paper-like nanohybrids: graphene oxide and carbon nanotubes decorated with silver nanoparticles** **A P1.27**
Rodríguez-Otamendi, D.I.*(1), Basiuk, V.A. (2), Rudolf, P. (1) & Basiuk, E.V. (3).
(1) Zernike Institute for Advanced Materials, University of Groningen, The Netherlands, (2) Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México, Mexico, (3) Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Mexico. * lead presenter

**15:30** **Nitrogen doped Carbon Nanowalls as Microporous Layers in PEM Fuel Cells** **A P1.28**
Alexandra M.I. Trefilov 1, Bogdan I. Bita 1, Sorin Vizireanu 1, Adriana Andronie 2, Gheorghe Dinescu 1
1. National Institute for Laser, Plasma and Radiation Physics - INFLPR, Magurele-Ilfov, Romania 2. University of Bucharest, 3 Nano-SAE Research Centre, Bucharest, Romania

**15:30** **Study of residual hydrogen in carbon films and nanoclusters synthesised by pulsed laser deposition** **A P1.29**
Petr Shvets, Alexey Grunin, Alexander Goikhman
REC «Functional Nanomaterials» Immnauel Kant Baltic Federal University



**Wednesday june 1**

## Physical Properties of Carbon Materials : H.-M. CHENG, N. YANG, A. Kumatani

**09:00** INV **High-Performance Graphene and h-BN Materials for Thermal Management** **A 7.1**
Hui-Ming Cheng
1 Shenyang National Laboratory for Materials Sciences, Institute of Metal Research, Chinese Academy of Sciences, Shenyang 110016, P. R. China 2 Faculty of Materials Science and Engineering / Institute of Technology for Carbon Neutrality, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Shenzhen 518055, P. R. China

**09:30** **Charge transport physics of a unique class of high-performance rigid-rod conjugated polymers** **A 7.2**
M. Xiao, R. L. Carey, H. Chen, X. Jiao, V. Lemaur, S. Schott, M. Nikolka, C. Jellett, A. Sadhanala, S. Rogers, S. P. Senanayak, A. Onwubiko, S. Han, Z. Zhang, M. Abdi-Jalebi, Y. Zhang, T. H. Thomas, N. Mahmoudi, L. Lai, E. Selezneva, X. Ren, M. Nguyen, Q. Wang, I. Jacobs, W. Yue, C. R. McNeill, G. Liu, D. Beljonne, I. McCulloch, H. Sirringhaus
Optoelectronics Group, Cavendish Laboratory, JJ Thomson Avenue, Cambridge CB3 0HE, UK.

**09:45** **Direct-write Formation of Integrated Bottom Contacts to Laser-Induced Graphene-like Carbon** **A 7.3**
Richard Murray, Orla O'Neill, Eoghan Vaughan, Daniela Iacopino, Alan Blake, Colin Lyons, Dan O'Connell, Joe O'Brien and Aidan J. Quinn
Tyndall National Institute

**10:00** INV **Quantum sensing with hyperpolarized nuclei** **A 7.4**
Ashok Ajoy
University of California, Berkeley

**10:30** **Discussion**

**10:45** **Coffee**

## Bioapplications I : J.-C. ARNAULT, Q. LI

**11:00** INV **Nanothermometry—sensing with nitrogen vacancy centers in diamond** **A 8.1**
Quan LI
Department of Physics, The Chinese University of Hong Kong

**11:30** **Detection and Manipulation of Intracellular Motion at Nanoscale Precision Using Nanodiamond Complexes** **A 8.2**
Yingke Wu, Zuyuan Wang, Priyadharshini Balasubramanian, Md Noor A Alam, Fedor Jelezko, Tanja Weil
Dr. Y. Wu, M. N. A. Alam, Prof. Dr. T. Weil Max Planck Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany, Dr. Z. Wang Institute for Measurement and Automation, Division of Sensor Technology and Measurement Systems, Bundeswehr University Munich, Werner-Heisenberg-Weg 39, 85579 Neubiberg, Germany, Dr. P. Balasubramanian, Prof. Dr. F. Jelezko Institute for Quantum Optics, Ulm University, Albert-Einstein-Allee 11, 89081 Ulm, Germany

**11:45** **Nanodiamond modified membranes for virus capture** **A 8.3**
Henry A. Bland1, Isabella A. Centeleghe2, Soumen Mandal1, Evan L. H. Thomas1, Jean-Yves Maillard2, and Oliver A. Williams1
1School of Physics and Astronomy, Cardiff University, Cardiff CF24 3AA, United Kingdom 2School of Pharmacy and Pharmaceutical Sciences, Cardiff University, Cardiff CF10 3NB, United Kingdom

**12:00** INV **Design and Application of Nanodiamond Sensors in Biology** **A 8.4**
Wu, Y., Liang, J., Ender, C.P., Weil, T.*
Max Planck Institute for Polymer Research, Mainz, Germany

**12:30** **Discussion**

**12:45** **Lunch and Plenary**

**15:00** **Coffee**

## Bioapplications II : N. YANG, N. Komatsu

**15:30** INV **Carbon-Based Nanoparticles for Cancer Theranostics: From Fundamental Chemistry to Advanced Biomedicine** — A 9.1
Naoki Komatsu
Kyoto University

**16:00** **Fluorescent Carbon Dots for bio-imaging and enhanced light harvesting** — A 9.2
Jingyi Wang (1,2), Luz Carime Gil Herrera (1,2), Ayse Ay(3), Isik Arel(3), Ozge Akbulut(3) and Ahu Gümrah Dumanli(1,2)
1 Department of Materials, The University of Manchester, Manchester, M13 9PL, 2 Henry Royce Institute, The University of Manchester, Oxford Road, Manchester, M13 9PL, 3 Faculty of Engineering and Natural Sciences, Sabanci University, Tuzla, Istanbul 34956, Turkey.

**16:15** **One-pot preparation of amino acids-doped carbon nanostructures as fluorescent pH sensors** — A 9.3
Giovanni Ferraro, Vanessa Susini, Veronica Lucia Rossi, Antonio Sanesi, Emiliano Fratini
Giovanni Ferraro: Department of Chemistry "Ugo Schiff" and CSGI, University of Florence, via della Lastruccia 3-Sesto Fiorentino, Florence, Italy Vanessa Susini: Department of Translational Research and of New Surgical and Medical Technologies, University of Pisa, via Savi 10, Pisa, Italy Veronica Lucia Rossi: bioMérieux Italia Spa, Via di Campigliano, 58, 50012, Bagno a Ripoli, Florence, Italy Antonio Sanesi: bioMérieux Italia Spa, Via di Campigliano, 58, 50012, Bagno a Ripoli, Florence, Italy Emiliano Fratini: Department of Chemistry "Ugo Schiff" and CSGI, University of Florence, via della Lastruccia 3-Sesto Fiorentino, Florence, Italy

**16:30** **Tailored Carbon Nanomaterial Interfaces for Electrocatalysis, Electroanalysis and Microbial Fuel Cell Applications** — A 9.4
James A. Behan, Adam Myles, Alessandro Iannaci, Eoin M. Scanlan, Paula E. Colavita and Frédéric Barrière
1 - Institut des Sciences Chimiques de Rennes, Université de Rennes 1, Rennes, France 2 - School of Chemistry and CRANN, Trinity College Dublin, Ireland

**16:45** **Applying NV center-based quantum sensing to study intracellular free radical response upon viral infections** — A 9.5
Kaiqi Wu, Thea A. Vedelaar, Viraj G. Damle, Izabella Rodenhuis- Zybertd and Romana Schirhagl
1. Department of Biomedical Engineering, University of Groningen, University Medical Center Groningen, Groningen, 9713AV The Netherlands 2. Department of Medical Microbiology and Infection Prevention, University of Groningen, University Medical Center, Groningen, 9713AV The Netherlands

**17:00** INV **Carbon Quantum Dots for Nanomedical Applications: Inhibition of Viral Infections to Treatment of Eye Diseases** — A 9.6
Sabine Szunerits
Institut d'Electronique, de Microélectronique et de Nanotechnologie (IEMN), UMR CNRS 8520, University of Lille, Avenue Poincaré-BP 60069, 59652 Villeneuve d'Ascq, France

**17:30** **Discussion**

**18:00** **E-MRS EU-40 Materials Prize & MRS Mid-Career Researcher Award Presentations**





## Supercapacitors and Batteries : H.-M. CHENG, Y. JUAN

**09:00** INV **Fabrication of Carbon-based Functional Materials with Tuning Structures for High-performance Energy Storage Devices** — A 10.1
Juan Yang1*, Siyu Liu1, and Jieshan Qiu2
1School of Chemical Engineering and Technology, Xi'an Jiaotong University, Xi'an 710049, China. 2College of Chemical Engineering, Beijing University of Chemical Technology, Beijing, 100029, China.

**09:30** **Processing of CNT/inorganic hybrid electrodes via rapid Joule heating** — A 10.2
Upama, Shegufta T.* (1, 2), Mikhalchan, Anastasiia (1), Arévalo, Luis (1), Vilatela, Juan J. (1), Green, Micah J. (2).
(1) IMDEA Materials Institute, Spain (2) Texas A&M University, USA * lead presenter

**09:45** **Carbon cloth based flexible electrodes for supercapacitor application** — A 10.3
Siyu Yu,* Yiqiu Xiao, Siyong Li, and Shetian Liu*
School of Chemistry and Chemical Engineering, Southwest University, Chongqing 400715, P. R. China

**10:00** **Copper sulphide-reduced graphene oxide aerogels for rechargeable batteries** — A 10.4
María Bernechea1,2,3,4*, Yanhan Li1,2,5, Xiaodong Shen5
1 Instituto de Nanociencia y Materiales de Aragón (INMA) CSIC-Universidad de Zaragoza, Zaragoza, Spain 2 Departamento de Ingeniería Química y Tecnologías del Medio Ambiente, Universidad de Zaragoza, Zaragoza, Spain 3 Networking Biomedical Research Centre of Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Madrid, Spain 4 ARAID, Zaragoza, Spain 5 College of Materials Science and Engineering, Nanjing Tech University, Nanjing, China * mbernechea@unizar.es

**10:15** **Fast Generation of Hydroxyl Radicals by Rerouting the Electron Transfer Pathway via Constructed Chemical Channels during the Pho** — A 10.5
Jinxing Zhang, Zhaoyu Zhou, Zhiyuan Feng, Hongying Zhao, Guohua Zhao
Tongji University

**10:30** **Discussion**

**10:45** **Coffee**

## Photo(electro)catalysis I : A. KUMATANI, Z. KANG

**11:00** INV **Carbon Dots Promise New Photoelectrocatalysts** — A 11.1
Zhenhui Kang
1Institute of Functional Nano and Soft Materials (FUNSOM), Soochow University, Suzhou 215123, China. 2Macao Institute of Materials Science and Engineering, Macau University of Science and Technology, Taipa 999078, Macau SAR, China.

**11:30** **Photoinduced charge separation in self-assembled Carbon dot-Plasmonic functional nanohybrids** — A 11.2
M. Reale, S. Chandra, G. Buscarino, A. Emanuele, M. Cannas, A. Sciortino, F. Messina,
University of Palermo, Italy, University of Aalto, Finland, University of Palermo, Italy, University of Palermo, Italy, University of Palermo, Italy, University of Palermo, Italy, University of Palermo, Italy,

**11:45** **A Facile Strategy for Controllable Synthesis of Rhodium Supported on Black Carbon to Boost Hydrogen Evolution Reaction** — A 11.3
Yan Guo, Yunwei Wang, Zhenfeng Huang, Xili Tong*, Nianjun Yang*
Yan Guo, Yunwei Wang, Xili Tong, State Key Laboratory of Coal Conversion, Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, China Yan Guo, University of Chinese Academy of Sciences, Beijing 100049, China Zhenfeng Huang, Key Laboratory for Green Chemical Technology of the Ministry of Education, Tianjin University, School of Chemical Engineering and Technology, Tianjin 300072, China Nianjun Yang, Institute of Materials Engineering, University of Siegen, Siegen 57076, Germany E-mail: nianjun.yang@uni-siegen.de

**12:00** **Oxygen-rich Graphene Quantum Dots as Platform for Self-Enhanced Electrochemiluminescence** — A 11.4
Na Ma, Bing-Bing Shang, Xin-Jian Song, Bao-Ping Qi
Hubei Key Laboratory of Biologic Resources Protection and Utilization, College of Chemistry and Environmental Engineering, Hubei Minzu University, Enshi 445000, China

**12:15** **Construction of 3D TiO2 with multilevel facet heterojunction for High Efficient Photoelectrocatalytic Oxidation of Bisphenol A** — A 11.5
Yiqiong Hu, Yanan Zhang*, and Guohua Zhao*
a School of Chemistry Science and Engineering, Shanghai Key Lab of Chemical Assessment andSustainability, Tongji University, Shanghai, 200092, China

**12:30** **Discussion**

**12:45** **Lunch and Plenary**

## Photo(electro)catalysis II : A. KUMATANI, C. A. MARTINEZ-HUITLE

**15:30** INV **Electrosynthesis of sulfate-based oxidizing species using boron doped diamond with simultaneous green hydrogen production** — A 12.1
Jéssica P. P. Barreto, Marco A. Quiroz, Danyelle M. de Araújo, Djalma R. da Silva, Edney Rafael Viana Pinheiro Galvão, Elisama Vieira dos Santos, Carlos A. Martínez-Huitle
Instituto de Química, Universidade Federal do Rio Grande do Norte, Natal, Rio Grande do Norte, Brazil

**16:00** **The Effect of Oxygen Content on Catalytic Activity of Graphene Quantum Dots as Nano-enzyme** — A 12.2
Li-Li Qin, Na Ma, Shang Bing-Bing, Bao-Ping Qi
Hubei Key Laboratory of Biologic Resources Protection and Utilization, College of Chemistry and Environmental Engineering, Hubei Minzu University, Enshi 445000, Hubei, China.

**16:15** **Materials based on carbon dots for photocatalytical and photoelectrocatalytical applications** — A 12.3
GUREL, A* (1), SCHAMING, D (1)
(1) Université de Paris ITODYS CNRS UMR 7086, France * lead presenter

**16:30** **Laser-induced Carbon from wood chips for electrocatalyst of oxygen reduction reaction** — A 12.4
Hiroya Abe
Frontier Research Institute for Interdisciplinary Sciences, Tohoku University

**16:45** **Nanoscale Electrochemical Imaging on Carbon Nanomolecular Structures** — A 12.5
C. Miura, A. Kumatani, Y. Horiguchi, H ida, T. Matsue, J. Umeda, K. Kondoh
Tohoku University, Osaka University

**17:00** **Study of the electrochemical hydrogenation of nitrobenzene in Cu and CuPd electrodes** — A 12.6
Carvajal, D* (1), Arcas, R (1), Mesa, C (1), Giménez, S (1), Fabregat-Santiago, F (1), Mas-Marzá, E (1).
(1) Group of Advances Materials and Energy, Institute of Advanced Materials, Universitat Jaime I, Spain.

**17:15** **Discussion**



# Friday june 3

## Electrochemistry and Sensing Applications : H.-M. CHENG, A. KUMATANI

**09:00** INV **Spatially Resolved Lithium-ion Insertion Process on Graphene and Thin Graphite Films** — A 13.1
A. Kumatani, Y. Sato, T. Matsue, W. Norimatsu, M. Motoyama, Y. Iriyama
Tohoku University, Nagoya University

**09:30** **Substrate determined diamond electrochemistry** — A 13.2
Xinyue Chen,a Meng Zhu,a Essraa Ahmed,b Paulius Pobedinskas,b Giridharan Krishnamurthy,b Xin Jiang,a Ken Haenen,*,b Nianjun Yang*,a
a Institute of Materials Engineering, University of Siegen, 57076 Siegen, Germany
b Institute for Materials Research (IMO), Hasselt University and IMOMEC, IMECvzw, 3590 Diepenbeek, Belgium

**09:45** **Graphene-based materials as electrochemical sensor materials: from experimental to theoretical characterization** — A 13.3
Flitcroft, J. M. (1,2), Nagaraja, T. (3), Das, S.(3), Chauvet, A.(1), Martsinovich, N.*(1)
(1)Department of Chemistry, University of Sheffield, UK, (2)Department of Chemistry, University of Manchester, UK, (3)Department of Industrial and Manufacturing Systems Engineering, Kansas State University, US

**10:00** **Photosensitive stamp inspired scalable fabrication strategy of wearable sensing arrays for noninvasive real-time sweat analysis** — A 13.4
Junxing Hao1, Zeqiang Zhu3, Chengguo Hu2, Zhihong Liu1,2,*
1 College of Chemistry and Chemical Engineering, Hubei University, 430062 Wuhan, China. 2 College of Chemistry and Molecular Sciences, Wuhan University, 430072 Wuhan, China. 3 School of Mechanical Science and Engineering, Huazhong University of Science and Technology, 430074 Wuhan, China.

**10:15** **β-cyclodextrin Functionalization of rGO for development of chemiresistive Lead (II) Sensing** — A 13.5
Madhurima Deb, Sumit Saxena, Rajdip Bandyopadhyaya and Shobha Shukla
Centre for Research in Nano Technology and Science, Indian Institute of Technology Bombay, Mumbai, MH 400076, India and Nanostructures Engineering and Modeling Laboratory, Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, MH 400076, India, Nanostructures Engineering and Modeling Laboratory, Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, MH 400076, India and Water Innovation Centre: Technology, Research & Education (WICTRE), Indian Institute of Technology Bombay, Mumbai, MH 400076, India, Department of Chemical Engineering, Indian Institute of Technology Bombay, Mumbai, MH 400076, India, Nanostructures Engineering and Modeling Laboratory, Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, MH 400076, India and Water Innovation Centre: Technology, Research & Education (WICTRE), Indian Institute of Technology Bombay, Mumbai, MH 400076, India

**10:30** **Discussion**

**10:45** **Coffee**

## Carbon Materials : N. YANG, J.-C. ARNAULT

**11:00** **Advanced Raman microscopy used to characterize amorphous carbons** — A 14.1
Cédric Pardanaud, Alexandre Merlen, Josephus Gerardus Buijnsters
Laboratoire PIIM, Aix-Marseille Université, CNRS, IM2NP, Universités d'Aix Marseille et de Toulon, CNRS , Department of Precision and Microsystems Engineering, Delft University of Technology,

**11:15** **Non-destructive methodologies based on Raman spectroscopy for monitoring the graphene oxide hydrogenation process** **A 14.2**

Robert Fonoll-Rubio, Rafael Mayer, Nina M. Carretero, Sebastián Murcia, Amaya Ortega, Beatriz Alonso, Carles Ros, Ignacio Becerril-Romero, Maxim Guc, Victor Izquierdo-Roca
Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs-Barcelona, Spain, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs-Barcelona, Spain, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs-Barcelona, Spain, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs-Barcelona, Spain, Graphenea SA, Mikeletegi 83, 20009, San Sebastián, Spain, Graphenea SA, Mikeletegi 83, 20009, San Sebastián, Spain, ICFO - Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology, 08860 Castelldefels, Spain, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs-Barcelona, Spain, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs-Barcelona, Spain, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs-Barcelona, Spain

**11:30** **Diamond-Like Carbon and thin graphitic layers based large-scale electrodes elaborated by a full laser process.** **A 14.3**

R. Meyer 1, F. Stock 1, F. Antoni 1, F.Z. Lahboub 1, S. Hajjar-Garreau 2.
1 ICube, D-ESSP, 23 rue du Loess, 67037 Strasbourg - France 2 IS2M, 15 rue Jean Starcky 68057 Mulhouse - France

**11:45** **Scattering and confinement in bilayer graphene topological nanostructures** **A 14.4**

L. Serra, N. Benchtaber, D. Sánchez
1 Institute for Interdisciplinary Physics and Complex Systems IFISC (CSIC-UIB), E-07122 Palma, Spain 2 Department of Physics, University of the Balearic Islands, E-07122 Palma, Spain

**12:00** **A novel path towards hydrophilic fullerene C60: oxygen plasma processing of fullerene powder** **A 14.5**

Del Sole, R.(1)*, Fracassi, F.(1)(2), Palumbo, F.(1), Milella, A.(1)(2)
(1) Dipartimento di Chimica, Università degli Studi di Bari, Italy (2) Istituto di Nanotecnologia, CNR, Italy * lead presenter

**12:15** **Flexographic Printing of Graphene-Enhanced Ink on an Unmodified Commercial Press at 100 m.min-1** **A 14.6**

Macadam, N. * (1), Ng, L.W.T. (1, 2), Hu, G. (1, 3), Shi, H. H. (4, 5), Wang, W. (4, 5), Zhu, X. (1), Ogbeide, O. (1), Liu, S. (1), Yang, Z. (1, 6), Howe, R.C.T. (1), Jones, C. (7), Huang, Y.Y.S. (4, 5), Hasan, T. (1)
(1) Cambridge Graphene Centre, University of Cambridge, UK, (2) School of Materials Science & Engineering, Nanyang Technological University, Singapore, (3) Department of Electronic Engineering, The Chinese University of Hong Kong, Hong Kong, (4) Department of Engineering, University of Cambridge, UK, (5) The Nanoscience Centre, University of Cambridge, UK, (6) College of Information Science and Electronic Engineering, Zhejiang University, China, (7) Novalia Ltd, UK.

**12:30** **Discussion and Closing**

E-MRS European Materials Research Society

Spring Meeting 2022

May 30 | June 3
Virtual Conference

# SYMPOSIUM B

## Ultra-doped semiconductors by non-equilibrium processing for electronic, photonic and spintronic applications

*Symposium Organizers :*


Deren YANG, Zhejiang University

Eric GARCIA HEMME, Universidad Complutense de Madrid

Meng-Ju (Renee) SHER, Wesleyan University

Shengqiang ZHOU, Helmholtz-Zentrum Dresden-Rossendorf


The papers will be published as a special issue
at Semiconductor Science and Technology (IOP)

RADIATE

NanoMEGAS
Advanced Tools for electron diffraction

HELIUM3

Lake Shore CRYOTRONICS

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### Hyperdoped Ge : Shengqiang Zhou

**09:00** INV **Sub-bandgap photorresponse at room temperature on extrinsic supersaturated Ge** — B 1.1

David Pastor(1,2), Hemi H. Gandhi (1), Tuan T. Tran (3), Stephan Kalchmair(1), L. A. Smillie(3), Ruggero Milazzo(4), Sashini Senali Dissanayake(5), Naheed Ferdous(6), Jonathan Mailoa(7), Elif Ertekin(7), Meng-Ju Sher(5), Enrico Napolitani(4), Marco Loncar(1), J. S. Williams(3), M. J. Aziz(1), E. Mazur(1)
(1) School of Engineering and Applied Sciences, Harvard University, Cambridge, Massachusetts 02138, USA (2) Department of Structure of Matter, Thermal Physics and Electronics, Universidad Complutense de Madrid,Plaza Ciencias 1, 28040 Madrid, Spain. (3) Department of Electronic Materials Engineering, Research School of Physics and Engineering, Australian National University, Canberra, ACT 0200, Australia (4)Dipartimento di Fisica e Astronomia, Universita di Padova and CNR-IMM, Via Marzolo 8, I-35131 Padova, Italy (5)Department of Physics, Wesleyan University, Middletown, Connecticut 06459, USA (6)Department of Mechanical Science & Engineering, University of Illinois at Urbana-Champaign, Illinois 61820, USA (7)Robert Bosch LLC, Cambridge, Massachusetts 02138, USA

**09:30** **Recovery of Boron Activation and Epitaxial down in Heavily B-doped Ge Epilayers by In-situ CVD Doping** — B 1.2

Wan-Hsuan Hsieh, Chun-Yi Cheng, Yi-Chun Liu, Chung-En Tsai, and C. W. Liu*
Graduate Institute of Electronics Engineering, National Taiwan University, Taipei, Taiwan.

**09:45** **Charge-transport properties of hyperdoped n-type Ge** — B 1.3

Mao Wang1,2*, S. Prucnal2, M. S. Shaikh2,3, U. Kentsch, M. Helm and Shengqiang Zhou2
1College of Physics and Electronic Engineering, Sichuan Normal University, Chengdu 610101, People's Republic of China 2Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Bautzner Landstraße 400, 01328 Dresden, Germany 3Technische Universität Dresden, 01062 Dresden, Germany

**10:00** **Hyperdoping germanium by Ion Implantation and Pulsed Laser Recrystallization** — B 1.4

Caudevilla, D. (*,1), García-Hemme, E. (1), Pérez-Zenteno, F. (1), Algaidy, S. (1), Olea, J. (1), San Andrés, E. (1), García-Hernansanz, R. (1), del Prado, A. (1), Mártil, I. (1), Berencén, Y. (2), Pastor, D. (1).
(1) Dpto. EMFTEL, Fac. CC. Físicas, Univ. Complutense de Madrid, 28040 Madrid, Spain. (2) Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Bautzner Landstr. 400, 01328 Dresden, Germany. * lead presenter (danicaud@ucm.es)

**10:15** **Electrical detection of light helicity using a chiral photodetector based on GaAsN** — B 1.5

R. S. Joshya1, H. Carrère1, V. G. Ibarra-Sierra2, J. C. Sandoval-Santana2, V. K. Kalevich3, E. L. Ivchenko3, X. Marie1, T. Amand1, A. Kunold2, A. Balocchi1
1 Université de Toulouse, INSA-CNRS-UPS LPCNO, 135 Avenue Rangueil 31077, Toulouse, France 2 Area de Física Teórica y Materia Condensada Universidad Autónoma Metropolitana Azcapotzalco Av. San Pablo 180, Col. Reynosa-Tamaulipas, 02200 Cuidad de México, México 3 Ioffe Physical-Technical Institute 194021, St. Petersburg, Russia

**10:30** **Discussion**

**10:45** **Coffee**

### GeSn : Slawomir Prucnal

**11:00** INV **Highly doped GeSn for plasmonic applications** — B 2.1

Inga A. Fischer
Experimental Physics and Functional Materials, BTU Cottbus-Senftenberg, 03046 Cottbus, Germany



**11:30** **The Influence of Femtosecond and Nanosecond Laser Radiation on Strain Relaxation of GeSn Epilayers** — B 2.2

Pavels Onufrijevs1, Patrik Ščajev2, Tadas Malinauskas2, Paulius Baronas2, Sarunas Varnagiris3, Jonas Karosas4, Ramona Durena1, Paulius Gečys4, Daniel Schwarz5, Michael Oehme5, Arturs Medvids1, Gediminas Račiukaitis4, Joerg Schulze5
1Institute of Technical Physics, Faculty of Materials Science and Applied Chemistry, Riga Technical University, P. Valdena 3/7, Riga, LV-1048, Latvia 2Institute of Photonics and Nanotechnology, Vilnius University, Sauletekio av. 3, Vilnius 10257, Lithuania 3Center for Hydrogen Energy Technologies, Lithuanian Energy Institute, Breslaujos 3, Kaunas 44403, Lithuania 4Center for Physical Sciences and Technology, Department of Laser Technologies, Savanoriu ave. 231, Vilnius, LT-02300, Lithuania 5Institute of Semiconductor Engineering (IHT), University of Stuttgart, Stuttgart, 70569, Germany

**11:45** **Substitutional 10% Sn incorporation in Ge by sputter deposition and pulsed laser melting** — B 2.3

Enrico Di Russo(1,2,3), Francesco Sgarbossa(1,2), Pierpaolo Ranieri(1), Samba Ndiaye(4), Sébastien Duguay(4), François Vurpillot(4), Lorenzo Rigutti(4), Jean-Luc Rouvière(5), Vittorio Morandi(3), Davide De Salvador(1,2), Enrico Napolitani(1,2,6).
(1) Dipartimento di Fisica e Astronomia, Università degli Studi di Padova, Via Marzolo 8, 35131 Padova, Italy. (2)INFN-LNL, viale dell'Università 2, 35020, Legnaro, Padova, Italy. (3) CNR-IMM, Via Gobetti 101, Bologna, 40129, Italy. (4) Normandie Univ., UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen, France. (5) Univ. Grenoble Alpes, CEA, IRIG-MEM, 38000 Grenoble, France. (6) CNR-IMM, Via S. Sofia 64, 95123 Catania, Italy.

**12:00** **Discussion**

**12:15** **Lunch**

### Optical hyperdoping and alloying : Eric Garcia Hemme

**13:45** INV **Hyperdoping and group IV alloy formation using pulsed laser melting** — B 3.1

Jeffrey M. Warrender, Philippe K. Chow, Senali Dissanayake, Qi Lim, Gordon Gryzbowski, Bruce Claflin, Meng-Ju Sher3, Jim Williams
U.S. Army DEVCOM Armament Center-Benet Laboratories, Watervliet NY, 12189, Columbia University Nano Initiative, New York, NY 10027, Department of Physics, Wesleyan University, Middletown CT, 06459, Research School of Physics, Australian National University, Canberra, ACT 2601, Australia, U.S. Air Force Research Lab, Wright-Patterson AFB, Dayton OH, 45431

**14:15** **Femtosecond laser hyperdoping silicon photoelectric detector** — B 3.2

Qiang Wu
Nankai University, China

**14:30** **Carrier recombination in black silicon fabricated by high repetition rate fs-laser** — B 3.3

Xiaolong Liu*, Behrad Radfar, Toni P. Pasanen, Ville Vähänissi, Hele Savin
Department of Electronics and Nanoengineering, Aalto University, Tietotie 3, FI-02150 Espoo, Finland

**14:45** **Unravelling the optical properties of femtosecond laser hyperdoped silicon by analytical modeling of absorptance** — B 3.4

Sören Schäfer (1), Patrick McKearney (1), Doris Mutschall (2), Simon Paulus (1), Stefan Kontermann (1)
(1) Hochschule Rhein-Main HSRM, Am Brückweg 26, 65428 Rüsselsheim, Germany, (2) InfraTec GmbH, Gostritzer Str. 61-63, 01217 Dresden, Germany

**15:00** **Discussion**

**15:15** **Coffee**

### Advanced characterization techniques : Renee Sher

**15:30** INV **High mobility magnetic semiconductors based on pnictides** — B 4.1

Hailong Wang, Qiqi Wei, Jialin Ma, Jianhua Zhao
1. State Key Laboratory of Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, Beijing 100083, China 2. College of Materials Science and Opto-Electronic Technology, University of Chinese Academy of Sciences, Beijing 100049, China 3. CAS Center for Excellence in Topological Quantum Computation, University of Chinese Academy of Sciences, Beijing 100049, China

**16:00** **Measuring Electric and Magnefic fields and doping concentration by local Electron Diffraction Maps** **B 4.2**

Jean-Luc Rouvière* (1), Kshipra Sharma (1), Djordje Dosenovic (1), Hanako Okuno (1), Arthur Avot (1,4), Lucas Bruas (2), Matthew Bryan (2), David Cooper (2), Bruno Da Silva (3), Zahra Momtaz (3), Martien Den Hertog (3), Alejandro Gomez Perez (4), Athanasios Galanis (4), Partha Pratim Das (4), Stavros Nicolopoulous (4) Victor Boureau (5)
(1) Univ. Grenoble Alpes, CEA-Grenoble, IRIG-MEM-LEMMA, 38054 Grenoble France (2) Univ. Grenoble Alpes, CEA-Grenoble, LETI, MINATEC, 38054 Grenoble France (3) Univ. Grenoble Alpes, CNRS, Institut Néel, 38000 Grenoble, France (4) NanoMEGAS, Rue Émile Claus 49 bte 9, 1050 Brussels, Belgium (5) Interdisciplinary Center for Electron Microscopy (CIME) EPFL Lausanne 1015, Switzerland

**16:15** **Atom Probe Tomography Applied to Hyperdoped Silicon** **B 4.3**

Austin J. Akey[1], David C. Bell[1][2]
[1] Center for Nanoscale Systems, Harvard University, Cambridge MA USA [2] Harvard John A. Paulson School of Engineering and Applied Sciences, Harvard University, Cambridge MA USA

**16:30** **Electron spin resonance characterization of silicon hyper-doped with Te125** **B 4.4**

A. Miele 1, F. Moro1, M. Wang2, S. Zhou2, and M. Fanciulli1
1. Department of Materials Science, University of Milano – Bicocca, Via Roberto Cozzi 55, 20125 Milan, Italy 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Bautzner Landstrasse 400, 01328 Dresden, Germany

**16:45** **Discussion**



**Tuesday may 31**

## Transition metal hyperdoped silicon : David Pastor

**09:00** INV **Advantages and limitations of transition-metal hyperdoping of Si for near-to-mid infrared detection** **B 5.1**

Jim S Williams
Department of Materials Physics, Research School of Physics, Australian National University, Canberra, Australia.

**09:30** **The role of Ag precipitates in Infrared Absorption Reduction of Ag-Hyperdoped Silicon** **B 5.2**

Jiawei Fu, Xiaodong Qiu, Li Cheng, Xuegong Yu*, Deren Yang
State Key Lab of Silicon Materials and School of Materials Science & Engineering, Zhejiang University, Hangzhou 310027, People's Republic of China.

**09:45** **Carrier Lifetimes in Gold-Hyperdoped Silicon – Influence of Dopant Incorporation Methods and Concentration Profiles** **B 5.3**

Sashini Senali Dissanayake (1), Nikki O. Pallat (1), Billy Yue (1), Philippe K. Chow (2), Shao Qi Lim (3), Yining Liu (4), Rhoen Fiutak (1), Jay Mathews (4), Jim S. Williams (3), Jeffrey M. Warrender (2) and Meng-Ju Sher (1)
(1) Department of Physics, Wesleyan University, Middletown, CT 06459 USA, (2) U.S. Army Combat Capabilities Development Command - Armament Center, Watervliet, NY, 12189, USA, (3) Department of Electronic Materials Engineering, Research School of Physics and Engineering, Australian National University, Canberra, Australian Capital Territory, 0200, Australia, (4) A Department of Physics, University of Dayton, Dayton, Ohio 45469, USA

**10:00** **An 18.6%-efficient titanium-hyperdoped silicon film tandem solar cell** **B 5.4**

H.W. Yang, X. Deng, Y.J. Chen, Z.Q. Shi, C. Wen, and W.B. Yang
State Key Laboratory of Environment-friendly Energy Materials, School of Science, Southwest University of Science and Technology, Mianyang 621010, China

**10:15** **Inferring the recrystallization regimes of silicon supersaturated with titanium after Pulsed Laser Melting through Transmittance** **B 5.5**

Montero, D.*, del Prado, A., Olea, J., González-Díaz, G., Pastor, D., García-Hemme, E., Caudevilla, D., Algaidy, S., Pérez-Zenteno, F., Duarte-Cano, S., García-Hernansanz, R., San Andrés, E., & Mártil, I.
Dpto. Estructura de la Materia, Física Térmica y Electrónica, Universidad Complutense de Madrid, Fac. de CC. Físicas. Plaza de Ciencias 1, E-28040 Madrid, Spain

**10:30** **Discussion**

**10:45** **Coffee**

## Chalcogen hyperdoped silicon : Mao Wang

**11:00** **Active Sites of Te in Hyperdoped Si by Hard X-ray Photoelectron Kikuchi-Diffraction** **B 6.1**

M. Hoesch1, M. Wang2, S. Zhou2, O. Fedchenko3, Ch. Schlüter1, D. Potorochin1,3, K. Medjanik4, S. Babenkov4, A. Ciobanu1, A. Winkelmann5, H.J. Elmers4 and G. Schönhense4
1DESY Photon Science, Hamburg, Germany, 2 Helmholtz-Zentrum Dresden-Rossendorf, Germany, 3TU Bergakademie Freiberg, Freiberg, Germany, 4JGU, Institut für Physik, Mainz, Germany, 5Academic Centre for Materials and Nanotechnology, AGH University of Science and Technology, Krakow, Poland

**11:15** **Microscopic mechanisms driving the removal of electrical deactivation defects in Se ultra-doped silicon: an ab initio study** **B 6.2**

Alberto Debernardi
CNR-IMM, Unit of Agrate Brianza, via C. Olivetti 2, 20864 Agrate Brianza (MB), Italy

**11:30** **Temperature-dependent charge carrier dynamics of tellurium-hyperdoped silicon** **B 6.3**

KM Ashikur Rahman, S. Senali Dissanayake, Shao Qi Lim, Philippe Chow, Jeffrey Warrender, Jim S Williams, Meng-Ju Sher
Department of Physics, Wesleyan University, Middletown, CT, United States-Department of Physics, Wesleyan University, Middletown, CT, United States-Research School of Physics, The Australian National University, Canberra, ACT, Australia-U.S. Army CCDC-Armament Center, Benet Labs Directorate, Watervliet, NY, United States-U.S. Army CCDC-Armament Center, Benet Labs Directorate, Watervliet, NY, United States-Research School of Physics, The Australian National University, Canberra, ACT, Australia-Department of Physics, Wesleyan University, Middletown, CT, United States

**11:45** **Fabrication of nitrogen hyperdoped silicon by non-equilibrium pulsed excimer laser processing** **B 6.4**
J. W. Barkby(1), F. Moro(2), N. Kalfagiannis(1), D. C. Koutsogeorgis(1), M. Fanciulli(2)
1. Department of Physics and Mathematics, Nottingham Trent University, Clifton Campus, Nottingham, NG11 8NS, United Kingdom, 2. Department of Materials Science, University of Milano – Bicocca, Via Roberto Cozzi 55, 20125 Milan, Italy

**12:00** **Discussion**

**12:15** **Lunch and Plenary**

### Highly mismatch alloy : Roger Loo

**15:00** INV **Highly mismatched alloys as a new platform for mid-IR plasmonics** **B 7.1**
Hassan Allami, Jacob J. Krich
Department of Physics, University of Ottawa, Ottawa, ON, Canada

**15:30** **Mid-infrared plasmonics in heavily doped GaAs fabricated by ion implantation and pulsed laser annealing** **B 7.2**
Juanmei Duan, Andrei Luferau, Glen Yen-Hsun Lin, Minghui Hong, Manfred. Helm, Shengqiang. Zhou, Slawomir. Prucnal
Juanmei Duan, Andrei Luferau, Manfred. Helm, Shengqiang. Zhou, Slawomir. Prucnal Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Bautzner Landstrasse 400, D-01328 Dresden, Germany Manfred. Helm Technische Universität Dresden, D-01062 Dresden, Germany Glen Yen-Hsun Lin, Minghui Hong National Taiwan University, Hsinchu 30013, Taiwan

**15:45** **Lossless Plasmons in Highly Mismatched Alloys** **B 7.3**
Hassan Allami(1), Jacob Krich(1,2)
(1)Department of Physics, University of Ottawa, Canada (2)School of Electrical Engineering and Computer Science, University of Ottawa, Canada

**16:00** **A Computational Search for n-Type Analogues of BiCuSeO Thermoelectrics** **B 7.4**
Michael Y. Toriyama, G. Jeffrey Snyder, Prashun Gorai
Northwestern University, Evanston, IL, USA, Northwestern University, Evanston, IL, USA, Colorado School of Mines, Golden, CO, USA.

**16:15** **Discussion**

### : Jeffrey M. Warrender

**16:30** **Cation substitution effects on the structural and optoelectronic properties of inorganic halide perovskites** **B 8.1**
Pablo Sánchez?Palencia (a,b), Gregorio García (a,b), Perla Wahnón (a,b) and Pablo Palacios (a,c)
(a) Instituto de Energía Solar, ETSI Telecomunicación, Universidad Politécnica de Madrid, Av. Complutense,30, 28040 Madrid, Spain. (b) Departamento de Tecnología Fotónica y Bioingeniería, ETSI Telecomunicación, Universidad Politécnica de Madrid, Av. Complutense, 30, 28040 Madrid, Spain. (c) Departamento de Física aplicada a las Ingenierías Aeronáutica y Naval. ETSI Aeronáutica y del Espacio, Universidad Politécnica de Madrid, Pz. Cardenal Cisneros, 3, 28040 Madrid, Spain

**16:30** **Plasmonic Hyper-doped Semiconductors for Infrared Q-switched lasing** **B 8.2**
Rang Li, Shengqiang Zhou, Feng Chen
Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Dresden, 01314, Germany□Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Dresden, 01314, Germany□School of Physics, State Key Laboratory of Crystal Materials, Shandong University, Jinan, 250100, China

**16:30** **Efficient electronic transport calculations via Rode's iterative algorithm** **B 8.3**
Anup Kumar Mandia, Bhaskaran Muralidharan, Seung-Cheol Lee, Satadeep Bhattacharjee
Department of Electrical Engineering, Indian Institute of Technology Bombay, Powai,, Mumbai 400076, India,Department of Electrical Engineering, Indian Institute of Technology Bombay, Powai,, Mumbai 400076, India,Indo-Korea Science and Technology Center, Bangalore 560065, India,Indo-Korea Science and Technology Center, Bangalore 560065, India



**16:30** **MOVPE growth of cubic GaN on GaAs (110) substrate?** **B 8.4**
Daldoul a, S. Othmani a,*, A. Mballo b, P. Vuong b, J.P. Salvestrini b,c, N. Chaaben a
a Laboratoire de Recherche sur les Hétéro-Epitaxies et Applications, Faculté des Sciences de Monastir, 5019, Université de Monastir, Tunisia b International Research Lab Georgia Tech ? CNRS (IRL 2958), Georgia Tech Lorraine, 2 rue Marconi, 57070, Metz, France c School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, 30332, USA

**16:30** **Transport mechanisms in hyperdoped silicon solar cells** **B 8.5**
García-Hernansanz, R. *(1), Duarte-Cano, S. (1), Pérez-Zenteno, F. (1), Caudevilla, D. (1), Algaidy, S. (1), García-Hemme, E. (1), Olea, J. (1), Pastor, D. (1), del Prado, A. (1), San Andrés, E. (1), Mártil, I. (1), Ros, E. (2), Puigdollers, J. (2), Ortega, P. (2), Voz, C. (2),
(1) Universidad Complutense de Madrid, Spain, (2) Universitat Politecnica de Catalunya, Spain

**16:30** **Optical and spin properties of low-dimensional nanostructures and organic/inorganic heterostructures** **B 8.6**
D.G. Kvashnin, E.V. Sukhanova, Z.I. Popov
Emanuel Institute of Biochemical Physics RAS

**16:30** **Advances in amorphous and polycrystalline tin oxide thin films and their applications in electronic devices** **B 8.7**
Avis, Christophe Jang, Jin
Department of Information Display, and Advanced Display Research Center, Kyung Hee University, Seoul, Korea

**16:30** **Magneto-optical probing of the magnetic and phase structures in InFeAs layers** **B 8.8**
Gan'shina, E.A.(1), Kun'kova, Z.E.(2), *Pripechenkov, I.M.(1), Markin, Yu.V.(2)
(1)Lomonosov Moscow State University, Russia, (2) Kotel'nikov Institute of Radioengineering and Electronics, Fryazino Branch, Russia,

**16:30** **Phase evolution of Te-hyperdoped Si upon furnace annealing** **B 8.9**
M. S. Shaikh, Mao Wang, R. Hübner, M. O. Liedke, M. Butterling, D. Solonenko, T. I. Madeira, Zichao Li, Yufang Xie, E. Hirschmann, A. Wagner, D. R. T. Zahn, M. Helm, Shengqiang Zhou
Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Bautzner Landstrasse 400, 01328 Dresden, Germany Helmholtz-Zentrum Dresden-Rossendorf, Institute of Radiation Physics, Bautzner Landstrasse 400, 01328 Dresden, Germany Semiconductor Physics, Chemnitz University of Technology, 09126 Chemnitz, Germany Dresden University of Technology, 01062 Dresden, Germany

**16:30** **Contact resistance of hyperdoped Si with deep-level impurities** **B 8.10**
Yunxia Zhou1, Mao Wang1,2, M. S. Shaikh1,3, U. Kentsch1, M. Helm1,3 S. Prucnal1, and Shengqiang Zhou1
1 Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Bautzner Landstraße 400, 01328 Dresden, Germany
2 College of Physics and Electronic Engineering, Sichuan Normal University, Chengdu 610101, People's Republic of China 3 Technische Universität Dresden, 01062 Dresden, Germany

**16:30** **Electronic transport properties of Si supersaturated with Ti and processed by rapid thermal annealing or pulsed-laser melting** **B 8.11**
Olea, J.*, González-Díaz, G., Pastor, D., García-Hemme, E., Caudevilla, D., Algaidy, S., Pérez-Zenteno, F., Duarte-Cano, S., García-Hernansanz, R., del Prado, A., San Andrés, E., & Mártil, I.
Dpto. Estructura de la Materia, Física Térmica y Electrónica, Universidad Complutense de Madrid, Fac. de CC. Físicas. Plaza de Ciencias 1, E-28040 Madrid, Spain * lead presenter (oleaariz@ucm.es)

**16:30** **Ti supersaturated Si by microwave annealing processes** **B 8.12**
Olea, J.* (1), González-Díaz, G. (1), Pastor, D. (1), García-Hemme, E. (1), Caudevilla, D. (1), Algaidy, S. (1), Pérez-Zenteno, F. (1), Duarte-Cano, S. (1), García-Hernansanz, R. (1), del Prado, A. (1), San Andrés, E. (1), & Mártil, I. (1)
Yao-Jen Lee (2), Tzu-Chieh Hong (2), Tien-Sheng Chao (3)
(1) Dpto. Estructura de la Materia, Física Térmica y Electrónica, Universidad Complutense de Madrid, Fac. de CC. Físicas. Plaza de Ciencias 1, E-28040 Madrid, Spain * lead presenter (oleaariz@ucm.es) (2) Taiwan Semiconductor Research Institute, Hsinchu, Taiwan. (3) Department of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan

**16:30** **High-throughput identification of point defects in SiC** **B 8.13**
Joel Davidsson:Viktor Ivády:Rickard Armiento:Igor A. Abrikosov
Linköping university, Linköping university, Max-Planck-Institut für Physik komplexer Systeme, Linköping university, Linköping university

**16:30** **On-chip monolithic integration of all-silicon elementary photonic building blocks in the optical telecommunication band** **B 8.14**

Caudevilla, D. *(1,2), Fowley, C. (2), Sakthikumar, S. (3), Hollenbach, M. (2,3), Prucnal, S. (2), Catuneanu, M. (3), Helm, M. (2,3), Zhou, S. (2), Astakhov, G.V. (2), Jamshidi, K. (3), Pastor, D. (1), García-Hemme, E. (1), Berencén, Y. (2).
(1) Dpto. EMFTEL, Fac. CC. Físicas, Univ. Complutense de Madrid, 28040 Madrid, Spain. (2) Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Bautzner Landstr. 400, 01328 Dresden, Germany. (3) Technische Universität Dresden, 01062, Dresden, Germany.

**16:30** **Silicon based IR absorber with hyperbolic metamaterial formed by selective laser annealing** **B 8.15**

A.I. Mukhammad* (1), V.O. Nalivaiko (1), G.D. Ivlev (1), O.Yu. Nalivaiko (2) & P.I. Gaiduk (1)
(1) Belarusian State University, Minsk, Belarus, (2) JSC «Integral», Minsk, Belarus

**16:30** **Fabrication and optical properties of Eu doped β-Ga2O3 nanoformations** **B 8.16**

Dumitru Untila1,2, Igor Evtodiev1,3, Iuliana Caraman3, Veaceslav Sprincean1, Nicolae Spalatu4
1 Moldova State University, A. Mateevici, 60, MD-2009, Chisinau, Republic of Moldova 2 Technical University of Moldova, Stefan cel Mare si Sfint bd., 168, MD-2004, Chisinau, Republic of Moldova 3 University of European Political and Economical Studies “Constantin Stere”, Stefan cel Mare si Sfint bd., 200, MD-2004, Chisinau, Moldova 4 Tallinn University of Technology, Department of Material and Environmental Technology, Ehitajate tee, 5, EE-19086 Tallinn, Estonia

**16:30** **Laser-induced nanostructuring in SiGe(Sn) alloy layers for Si/SiC heteroepitaxy** **B 8.17**

P.I.Gaiduk
Department of Physical Electronic and Nanotechnology, Belarusian State University, Nezavisimosti 4, Minsk, 220030, Belarus



## Wednesday june 1

### Future devices : Santanu Ghosh

**09:00** INV **Ultra-highly Doped Si and SiGe for Future Nanosheet CMOS Devices** **B 9.1**

Roger Loo 1, Clement Porret 1, Erik Rosseel 1, Andriy Hikavyy 1, Gianluca Rengo 1,2,3, Rami Khazaka 4, Brendan Marozas 4, Wonjong Kim 4, André Vantomme 2, and Robert Langer 1
1 Imec vzw, Kapeldreef 75, 3001 Leuven, Belgium , 2 Quantum Solid State Physics, KU Leuven, Celestijnenlaan 200D, 3001 Leuven, Belgium , 3 Fonds Wetenschappelijk Onderzoek (FWO) - Vlaanderen, Egmontstraat 5, 1000 Brussels, Belgium , 4 ASM Belgium NV, Kapeldreef 75, 3001 Leuven, Belgium

**09:30** **Ultra-doped superconducting Si:B layers** **B 9.2**

Léonard Desvignes* (1), Francesca Chiodi (1), Géraldine Hallais (1), Gilles Patriarche (1), Dominique Débarre (1), François Lefloch (2)
(1) Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Saclay, C2N Palaiseau, 91120 Palaiseau, France (2) Université Grenoble Alpes, CEA-PHELIQS/LaTEQS, F-38000 Grenoble, France

**09:45** **Superconducting silicon microwave resonators** **B 9.3**

R. Delagrange [1], D. Flanigan [2], P. Bonnet [1], N. Brochu [1], D. Débarre [1], H. le Sueur [2,3] and F. Chiodi [1]
[1] Centre de Nanosciences et de Nanotechnologies (C2N), CNRS, Univ. Paris Sud, Université Paris-Saclay, 91120 Palaiseau, France [2] Quantronics group, SPEC, CEA, CNRS, Université Paris-Saclay, CEA Saclay, 91191 Gif-sur-Yvette, France
[3] IJCLab, Univ. Paris-Sud, CNRS/IN2P3, Université Paris-Saclay, 91405 Orsay, France

**10:00** **Proximity-induced superconductivity in all-silicon superconductor /normal-metal junctions** **B 9.4**

Obaid Adami, Leonard Desvignes, François LEFLOCH, Dominique DEBARRE and Francesca CHIODI
Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Sud, Université Paris-Saclay, C2N Orsay, 91405 Orsay Cedex, France

**10:15** **Study of thermal relaxation mechanisms in CVD monocrystalline boron-doped diamond films by noise thermometry** **B 9.5**

Kolbatova, A.(1,2), Titova, N. *(2), Baeva E.(1,2), Semenov, A.(2), Goltsman, G.(1,2), Eon, D.(3), Bustarret, E.(3), Khrapai, V.(1,4)
(1) National Research University Higher School of Economics, Russia, (2) Moscow Pedagogical State University, Russia, (3) Univ. Grenoble Alpes, CNRS, Institut Néel, France, (4) Institute Solid State Physics RAS, Russia * lead presenter

**10:30** **Discussion**

**10:45** **Coffee**

### Doping nanocrystals : Qiang Wu

**11:00** INV **Doped silicon nanocrystals: synthesis, properties and devices** **B 10.1**

Xiaodong Pi
State Key Laboratory of Silicon Materials and School of Materials Science and Engineering, Zhejiang University, Hangzhou, 310027, China. Hangzhou Innovation Center, Zhejiang University, Hangzhou, 311200, China.

**11:30** **Plasmonic properties of highly phosphorus-doped Si nanocrystals obtained in SiO/SiO2 multilayers** **B 10.2**

Alaa E. Giba (1,2), A. Valdenaire (1), X. Devaux (1), M. Stoffel (1), A. Bouché (1), J.M. Poumirol (3), C. Bonafos (3), S. Guehairiae (4). Talbot (4), M. Vergnat (1) & H. Rinnert* (1)
(1) Université de Lorraine, CNRS, Institut Jean Lamour, F-54000 Nancy, France
(2) National Institute of Laser Enhanced Sciences, Cairo University, Giza 12613, Egypt (3) CEMES-CNRS, Université de Toulouse, Toulouse, France (4) Normandie Univ., UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen, France

**11:45** **High Phosphorous Doping of Silicon Nanocrystals Embedded in SiO2: location and concentration of dopant at the atomic scale** **B 10.3**

E. Talbot1, S. Guehairia1, R. Demoulin1, P. Pareige1, D. Mathiot2, M. Stofell3, X. Devaux3, H. Rinnert3, W. Chen4, D. LI5, K. Chen5
1-Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen, France 2-ICube Laboratory, Université de Strasbourg and CNRS, B.P. 20, 67037 Strasbourg cedex, France 3-Université de Lorraine, UMR CNRS 7198, Institut Jean Lamour, BP 70239, 54506 Vandœuvre-lès-Nancy, France 4-School of Physical Science and Technology, Ningbo University, Ningbo, 315211, China 5-School of Electronic Science and Engineering, National Laboratory of Solid State Microstructures, Collaborative Innovation Center of Advanced Microstructures, Jiangsu Provincial Key Laboratory of Advanced Photonic and Electronic Materials, Nanjing University, Nanjing 210000, China

**12:00** **Discussion**

**12:15** **Lunch and Plenary**

## Defect engineering : Jacob Krich

**15:00** INV **Dissolution of dopant-vacancy clusters in semiconductors** **B 11.1**

Slawomir Prucnal
Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf Bautzner Landstraße 400, D-01328 Dresden, Germany

**15:30** **Room Temperature Ferromagnetism in doped and pure Zinc oxide and Gallium nitride Films** **B 11.2**

Santanu Ghosh1, Preetam Singh1, PushpSen Satyarthi1, Pankaj Srivastava1 and Shengqiang Zhou2
1 Nanostech Laboratory, Department of Physics, Indian Institute of Technology Delhi, New Delhi-110016, India 2 Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Bautzner Landstr. 400, 01328 Dresden, Germany

**15:45** **Strain induced high hole activation in p-AlGaN and its application in high performance UVC-LED** **B 11.3**

Ye Yuan1, Shangfeng Liu1,2 and Xinqiang Wang1,2
1. Songshan Lake Materials Laboratory, Dongguan Guangdong 523808, P. R. China
2. State Key Laboratory of Artificial Microstructure and Mesoscopic Physics School of Physics, Nano-Optoelectronics Frontier Center of Ministry of Education, Peking University, Beijing 100871, P. R. China

**16:00** **Charting properties in the compositional and configurational space of spinel nitride solid solutions via machine learning** **B 11.4**

Pablo Sánchez-Palencia (a,b), Said Hamad (c), Pablo Palacios (a,d), Ricardo Grau-Crespo (e), Keith T. Butler (f)
(a) Instituto de Energía Solar, ETSI Telecomunicación, Universidad Politécnica de Madrid, Av. Complutense 30, 28040 Madrid, Spain, (b) Departamento de Tecnología Fotónica y Bioingeniería, ETSI Telecomunicación, Universidad Politécnica de Madrid, Av. Complutense 30, 28040 Madrid, Spain, (c) Department of Physical, Chemical and Natural Systems, Universidad Pablo de Olavide, 41013 Seville, Spain, (d) Departamento de Física aplicada a las Ingenierías Aeronáutica y Naval, ETSI Aeronáutica y del Espacio, Universidad Politécnica de Madrid, Pz. Cardenal Cisneros 3, 28040 Madrid, Spain, (e) Department of Chemistry, University of Reading, Reading RG6 6DX, United Kingdom, (f) SciML, Scientific Computing Department, Rutherford Appleton Laboratory, Harwell OX11 0QX, United Kingdom

**16:15** **Ferromagnetic hybrid nanowires for zero-field topological superconductivity** **B 11.5**

Yu Liu, Saulius Vaitiekėnas, Sara Martí-Sánchez, Charles M. Marcus, Jordi Arbiol, Kathryn A. Moler, Peter Krogstrup
Yu Liu, Saulius Vaitiekėnas, Charles M. Marcus, Peter Krogstrup: Center for Quantum Devices, Niels Bohr Institute, University of Copenhagen, 2100 Copenhagen, Denmark. Sara Martí-Sánchez, Jordi Arbiol: Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Campus UAB, Bellaterra, 08193 Barcelona, Catalonia, Spain. Kathryn A. Moler: Department of Physics, Stanford University, Stanford, California 94305, USA.

**16:30** **Discussion and Closing**

**17:00** **Discussion: symposium B for future EMRS?**

**18:00** **E-MRS EU-40 Materials Prize & MRS Mid-Career Researcher Award Presentations**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM C

## Semiconductor nanostructures towards opto-electronic and photonic device applications – VIII

*Symposium Organizers :*

Anna FONTCUBERTA I MORRAL,
Laboratory of Semiconductor Materials Institute of Materials, IMX

Iwan MOREELS, Ghent University

Jean-Francois DAYEN, Université de Strasbourg

Sergio BROVELLI, University of Milano-Bicocca

**Monday may 30**

**08:45** **Welcome and Introduction to the Symposium**

## Synthesis and optical properties I : Sergio Brovelli

**09:00** INV **Halide Perovskite Nanocrystals: Synthesis and Optical Properties** C 1.1
Liberato Manna
Department of Nanochemistry, Istituto Italiano di Tecnologia, via Morego 30, 16163 Genova, Italy

**09:30** **Synthesis and characterization of phosphonium based 1D halide perovskites** C 1.2
Prabhanjan Pradhan, Subrat Rout and Biplab K Patra *(Corresponding Author)
Email- prabhanjan.p@immt.res.in Email-bkpatra@immt.res.in (Corresponding Author)
Materials Chemistry Department, CSIR-Institute of Minerals and Materials Technology, Bhubaneswar, 751013, India

**09:45** **2D hybrid perovskite for light sensing** C 1.3
Rosanna Mastria, Karl Jonas Riisnaes, Agnes Bacon, Ioannis Leontis, Hoi Tung Lam, Tsz Hin Edmund Chan, Luisa De Marco, Laura Polimeno, Annalisa Coriolano, Steven Hepplestone, Monica Felicia Craciun, and Saverio Russo
Rosanna Mastria, Karl Jonas Riisnaes, Agnes Bacon, Ioannis Leontis, Hoi Tung Lam, Tsz Hin Edmund Chan, Steven Hepplestone, Monica Felicia Craciun, Saverio Russo Centre for Graphene Science, College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter EX4 4QL, United Kingdom Luisa De Marco, Laura Polimeno, Annalisa Coriolano, Institute of Nanotechnology, CNR NANOTEC, via Monteroni, 73100, Lecce, Italy,

**10:00** **Development of CdSe/CdS core/shell nanocrystals with near-unity fluorescence efficiency** C 1.6
Alina Myslovskal, Ali Hossain KhanII, and Iwan MoreelsI *
I Department of Chemistry, Ghent University, 9000 Ghent, Ghent, Belgium II Department of Chemical, Biological & Macromolecular Sciences, S.N. Bose National Centre for Basic Sciences, JD Block, Sector-III, Salt Lake City, Kolkata, 700106, India

**10:15** **Strongly Anharmonic Octahedral Tilting in 2D Hybrid Halide Perovskites** C 1.5
Menahem, Matan*(1), Dai, Zhenbang(2), Aharon, Sigalit(1), Sharma, Rituraj(1), Asher, Maor(1), Diskin-Posner, Yael(1), Korobko, Roman(1), Rapp, Andrew M.(2), Yaffe, Omer(1)
(1) Weizmann Institute of Science, Israel (2) University of Pennsylvania, Philadelphia, Pennsylvania * lead presenter

**10:30** **Discussion**

**10:45**

## Nanoparticles synthesis and growth : Francesco Carulli

**11:00** **Ultrahigh sensitive optical conductive polymer nanowires with quantum nanodots synthesized by a pulsed laser irradiation** C 2.1
Masahiro Goto, Michiko Sasaki
National Institute for Materials Science

**11:15** **Experimental and computational study of Silicon Clathrates nano-cages occupation impact on the semiconducting properties** C 2.2
Vollondat, R.*(1), Stoeffler, D.(2), Roques, S.(1), Slaoui, A.(1), Fix, T.(1)
(1) CNRS et Université de Strasbourg, Laboratoire ICube, 67037 Strasbourg, France (2) CNRS et Université de Strasbourg, Institut de Physique et Chimie des Matériaux de Strasbourg, F-67034 Strasbourg, France * lead presenter

**11:30** **Nanoparticles of ZnMeO (Me: Mn, Co, Cr) generated by pulsed laser ablation in liquids and ultrasound wave-assisted** C 2.3
Stolyarchuk I. D., Dan?kiv O. O., Kuzyk O. V., Holskiy V. B., Metsan Kh. O., Hrytskiv T. V., Krypak A. O.
Department of Physics, Drohobych Ivan Franko State Pedagogical University, 24 I.Franko str., 82100 Drohobych, Ukraine.

**11:45** **Controlled-Growth of Gold Nanoparticle on Janus-Type Cu2-xS/CuInS2 Heteronanorods via Photochemical Deposition** C 2.4
Fenghuan Zhao,1* Chenghui Xia,2 Celso de Mello Donega,2 Jean-Pierre Delville,3 Marie-Helene Delville,1
1. Univ. Bordeaux, CNRS, Bordeaux INP, ICMCB, UMR 5026, Pessac F-33608, France 2. Debye Institute for Nanomaterials Science, Utrecht University, 3508 TA Utrecht, Netherlands 3. Univ. Bordeaux, CNRS, LOMA, UMR 5798, Talence F-33405, France



**12:00** **Discussion**

**12:15** **Lunch**

## Optical properties and defect studies in nanostructures : Iwan Moreels

**13:45** INV **Finding the weakest link: surface electrochemistry of nanomaterials** C 3.1
A. Houtepen
TU Delft, The Netherlands

**14:15** **Exciton recombination dynamics in thin films of 2D tin iodide perovskite inkjet-printed on a flexible substrate** C 3.2
Chirvony, V.S.(1), Suárez, I.(2), Martínez-Pastor, J.P.(1), Dirin, D.N.(3,4), Kovalenko, M.V.(3,4), Vescio, G(5), Frieiro, J.L.(5), Garrido, B.(5), Cirera, A.(5)
(1)UMDO, Instituto de Ciencia de los Materiales, Universidad de Valencia, Valencia 46980, Spain, (2)Escuela Técnica Superior de Ingeniería, Universidad de Valencia, Valencia 46100, Spain, (3)Department of Chemistry and Applied Biosciences, ETH Zu?rich, Zu?rich 8093, Switzerland, (4)Laboratory for Thin Films and Photovoltaics, Empa-Swiss Federal Laboratories for Materials Science and Technology, Du?bendorf 8600, Switzerland, (5)Applied Nanoelectronics, Department of Electronics, University of Barcelona, 08028 Barcelona, Spain.

**14:30** **Supported Indium Phosphide Quantum Dots for Visible-Light Photo-Redox Catalysis** C 3.3
Kaltoum Bakkouche 1,2,*, Fabio Ferrari 1, Nadia Katir 2, Abdelkrim El Kadib 2, Céline Nayral 1, Fabien Delpech 1.
1 LPCNO, Université de Toulouse, CNRS, INSA, UPS, 135 Avenue de Rangueil, 31077 Toulouse, France 2 Euromed Research Center, Engineering Division, Euro-Med University of Fès (UEMF), Route de Meknes, Rond-point de Bensouda, 30070 Fès, Maroc

**14:45** **Probing TMD defects with atomic scale probe microscopy** C 3.4
Edward Dunn, Professor Robert Young, Doctor Samuel Jarvis
Lancaster University Physics Department, Lancaster University Physics Department, Lancaster University Physics Department

**15:00** **Discussion**

## Synthesis and optical study of nanowires : Valerio Pinchetti

**15:15** INV **Showcasing the advantage of nanowire configuration for functional characterization of new materials** C 4.1
Mirjana Dimitrievska,1 Simon Escobar Steinvall,1 Elias Z. Stutz,1 Rajrupa Paul,1 Jean-Baptiste Leran,1 and Anna Fontcuberta i Morral1,2
1 - Laboratory of Semiconductor Materials, Institute of Materials, Faculty of Engineering, École Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland 2 - Institute of Physics, Faculty of Basic Sciences, École Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland

**15:45** **Silicon nanowires for photovoltaic applications** C 4.2
Mohamed BEN RABHA, Wissem DIMASSI, Belgassem BOUKTIF
LaNSER, CRTEN

**16:00** **Core-shell nanowires based on TiO2 and CuO with enhanced optoelectronic properties** C 4.3
Andreea Costas (1)*, Nicoleta Preda (1), Monica Enculescu (1), Andrei Kuncser (1) and Ionut Enculescu (1)
(1) National Institute of Material Physics, 405A Atomistilor Street, 077125, Magurele, Romania

**16:15** **Discussion**

**16:30**

## Advanced spectroscopy of nanostructures I : Elena Shornikova

**16:45** INV **By design light matter interaction in nanocrystal array, a step toward active nanophotonics** C 5.1
Audrey Chu, Charlie Gréboval, Tung Huu Dang, Adrien Khalili, Angela Vasaneli, Gregory Vincent, Emmanuel Lhuillier
a. Sorbonne Université, CNRS, Institut des NanoSciences de Paris, INSP, F-75005 Paris, France. b. Laboratoire de physique de l?Ecole Normale Supérieure, ENS, Université PSL, CNRS, Sorbonne Université, Université de Paris, 75005 Paris, France c. ONERA - The French Aerospace Lab, 6, chemin de la Vauve aux Granges, BP 80100, F-91123 Palaiseau, France.

**17:15** **Hot carrier dynamics in monolayer WS2: hot carrier cooling, carrier-carrier interaction, and trapping** **C 5.2**

Tong Wang, Thomas R. Hopper, Navendu Mondal, Sihui Liu, Felice Torrisi, Artem Bakulin
Department of Chemistry, Imperial College London, White City Campus, London W12 0BZ, United Kingdom, Department of Materials Science and Engineering, Stanford University, Stanford, California 94305, United States, Department of Chemistry, Imperial College London, White City Campus, London W12 0BZ, United Kingdom, Department of Chemistry, Imperial College London, White City Campus, London W12 0BZ, United Kingdom, Department of Chemistry, Imperial College London, White City Campus, London W12 0BZ, United Kingdom, Department of Chemistry, Imperial College London, White City Campus, London W12 0BZ, United Kingdom,

**17:30** **Isolated [SbCl6]3- Octahedra Are the Only Active Emitters in Rb7Sb3Cl16 Nanocrystals** **C 5.3**

Valerio Pinchetti(1), Baowei Zhang(2), Juliette Zito(2), Andrea Pianetti(1), Ivan Infante(2), Luca De Trizio(2), Liberato Manna(2) and Sergio Brovelli(1)
(1) Dipartimento di Scienza dei Materiali, Università degli Studi di Milano-Bicocca, Via Roberto Cozzi 55, 20125 Milano, Italy (2) Nanochemistry Department, Istituto Italiano di Tecnologia (IIT), Via Morego 30, 16163 Genova, Italy

**17:45** **Discussion**



**Tuesday may 31**

**Perovskite nanostructures for optoelectronics : Liberato Manna**

**09:00** INV **Shape-directed assembly of lead halide perovskite nanocrystals into superfluorescent superlattices** **C 6.1**

Maksym V. Kovalenko1,2
1 ETH Zürich, Department of Chemistry and Applied Biosciences, CH-8093, Zurich, Switzerland 2 Empa-Swiss Federal Laboratories for Materials Science and Technology, CH-8600, Dübendorf, Switzerland E-mail address: mvkovalenko@ethz.ch

**09:30** **Robust, reproducible, low-waste and large scale procedure for high-quality CsPbBr3 Nanobrick synthesis for scintillation** **C 6.2**

Sara Mecca, Francesca Pallini, Valerio Pinchetti, Francesco Bruni, Francesca Cova,Luca Beverina
Dipartimento di Scienza dei Materiali, Università degli Studi di Milano-Bicocca, 20125 Milano, Italy Glass to Power SpA via Fortunato Zeni 8, Rovereto (TN)

**09:45** **Lead Chalcohalide Nanocrystals: from Heterosctructures with Cesium Lead Perovskites to Phase Selective Synthesis** **C 6.3**

Andrea Pianetti, Stefano Toso, Muhammad Imran, Enrico Mugnaioli, Annagrazia Moliterni, Rocco Caliandro, Nadine Schrenkere, Andrea Pianetti, Juliette Zito, Francesco Zaccaria, Mauro Gemmi, Cinzia Gianninid, Sergio Brovelli, Ivan Infante, Sara Balse, Liberato Manna
Dipartimento di Scienza dei Materiali, Università degli Studi di Milano-Bicocca, 20125 Milano, Italy Department of Nanochemistry, Istituto Italiano di Tecnologia, Via Morego 30, 16163 Genova, Italy International Doctoral Program in Science, Università Cattolica del Sacro Cuore, 25121 Brescia, Italy Electron Crystallography, Center for Materials Interfaces, Istituto Italiano di Tecnologia, Viale Rinaldo Piaggio 34, 56025 Pontedera, Italy d Istituto Di Cristallografia ? Consiglio Nazionale delle Ricerche (IC?CNR), I-70126 Bari, Italy e Electron Microscopy for Materials Science (EMAT) and NANOlab Center of Excellence, University of Antwerp, 2020 Antwerp, Belgium Dipartimento di Chimica e Chimica Industriale, Università degli Studi di Genova, Via Dodecaneso 31, 16146 Genova, Italy

**10:00** **Exploring Perovskite-Organic Multiple Quantum Wells for Efficient Emission and Lasing** **C 6.4**

Tobias Antrack (1), Martin Kroll (1), Markas Sudzius (1), Johannes Benduhn (1), Yana Vaynzof (1), Karl Leo (1)
(1) Technische Universität Dresden, IAPP- Dresden Integrated Center for Applied Physics and Photonic Materials, Germany

**10:15** **Extreme X-ray radiation hardness and high scintillation yield in perovskite nanocrystals** **C 6.5**

Matteo L. Zaffalon, Francesca Cova, Mingming Liu, Alessia Cemmi, Ilaria Di Sarcina, Carmelita Rodà, Mauro Fasoli, Francesco Meinardi, Liang Li, Anna Vedda, Sergio Brovelli
1. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano ? Bicocca, Milano, Italy, 2. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano ? Bicocca, Milano, Italy, 3. School of Environmental Science and Engineering, Shanghai Jiao Tong University, 800 Dongchuan Road, 200240 Shanghai, P.R. China, 4. ENEA Fusion and technology for nuclear safety and security department, Casaccia R.C:, Via Anguillarese 301, 00123 Rome, Italy, 5. ENEA Fusion and technology for nuclear safety and security department, Casaccia R.C:, Via Anguillarese 301, 00123 Rome, Italy, 6. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy, 7. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano ? Bicocca, Milano, Italy, 8. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy, 9. School of Environmental Science and Engineering, Shanghai Jiao Tong University, 800 Dongchuan Road, 200240 Shanghai, P.R. China, 10. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano ? Bicocca, Milano, Italy, 11. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano ? Bicocca, Milano, Italy,

**10:30** **Discussion**

**10:45**

## Nanomaterial for optoelectronic devices I : Iwan Moreels

**11:00** **Simultaneously formation of g-C3N4/TiO2 binary films on Ti surface as perspective material for renewable energy** — C 7.1
M. Bondarenko, P. Silenko, Yu. Solonin, A. Ragulya, M. Zahornyi, N. Gubareni, O. Khyzhun, N. Yarova
Frantsevich Institute for Problems of Materials Science of NASU, Krzhyzhanovsky St. 3, 03142 Kiev, Ukraine

**11:15** **Optimization of Silver nanowire Electrodes for Non-Fullerene Organic Solar Cells : PCE12:ITIC** — C 7.2
Issoufou IBRAHIM ZAMKOYE (1,2), Johann BOUCLÉ (1,2), Bruno LUCAS (1,2), Sylvain VEDRAINE (1,2).
(1) Univ. Limoges, XLIM, UMR 7252, F-87000 Limoges, France (2) CNRS, XLIM, UMR 7252, F-87000 Limoges, France.

**11:30** **Inkjet printing lead-free ASnX3 (A =FA, MA, X = Br, I) perovskites for next generation solar cells** — C 7.3
J.L. Frieiro,1 G. Vescio,1 F. Vinocour,2 S. Hernández,1 B.Bursa,2 A. Cirera,1 S. Öz,2 B. Garrido1.
1) MIND-IN2UB, Department of Electronics and Biomedical Engineering, Universitat de Barcelona, Martí i Franquès 1, 08028 Barcelona (Spain) 2) SAULE Technology Center, Wroclaw Technology Park , 11 Dunska Str. Sigma building 54-427 Wroclaw, Poland

**11:45** **Enhanced light trapping by surface decoration with subwavelength dielectric arrays** — C 7.4
Ashish Prajapati (1) Gil Shalev (1, 2)
1. School of Electrical and Computer Engineering, Ben-Gurion University of the Negev, Israel 2. The Ilse-Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, POB 653, Beer-Sheva 8410501, Israel

**12:00** **Discussion**

**12:15** **Lunch and Plenary**

## Nanomaterial for optoelectronic devices II : Francesco Carulli

**15:00** INV **Nanocrystals, mesocrystals, supercrystals ? a toolbox for materials with collective optoelectronic effects** — C 8.1
Marcus Scheele
Universität Tübingen, Institute of Physical and Theoretical Chemistry, Germany

**15:30** **Enhanced GaAsSb/GaAsN type-II superlattice solar cell performance by accurate composition control** — C 8.2
A. Gallego Carro, L. Stanojevi?, Malte Schwarz, S. Catalán-Gómez, V. Braza, S. Flores, D. Fernandez-Reyes, T. Ben, D. González, D. Fuertes Marrón, G. Barbieri, J.M. Llorens, B. Alén, A. Guzman, A. Hierro, ?. Ga?evi?, J. M. Ulloa
Institute for Optoelectronic Systems and Microtechnology (ISOM), Universidad Politécnica de Madrid, University Research Institute on Electron Microscopy & Materials, (IMEYMAT), Universidad de Cádiz, Instituto de Energía Solar (IES), Universidad Politécnica de Madrid, Instituto de Micro y Nanotecnología IMN-CNM, CSIC

**15:45** **Exploring the optoelectronic properties of high-performing 2D TMDs exfoliated via solution-processable routes** — C 8.3
Rebekah A Wells, Miao Zhang, Tzu-Heng Cheng, Victor Boureau, Marina M. Caretti, Kevin Sivula
Ecole Polytechnique Federale de Lausanne (LIMNO, LBEN, LBEN, CIME, LIMNO, LIMNO)

**16:00** **Single photon emitters arrays by capillary assembly of colloidal semiconductor CdSe/CdS nanocrystals** — C 8.4
M. Barelli, C. Vidal, S. Fiorito, V. Aglieri, A. Myslovska, R. Sapienza, I. Moreels and F. Di Stasio
M. Barelli,S. Fiorito, V. Aglieri, F. Di Stasio - Istituto Italiano di Tecnologia (Italy)
C. Vidal,R. Sapienza - Imperial College (UK) A. Myslovska, I. Moreels - Ghent University (Belgium)

**16:15** **Discussion**

**16:30**



## Nanostructures for lasing application : Sergio Brovelli

**16:45** INV **Recent Progress Toward Colloidal Quantum Dot Laser Diodes** — C 9.1
Victor I. Klimov
Chemistry Division, Los Alamos National Laboratory, Los Alamos, New Mexico, USA. klimov@lanl.gov

**17:15** **Optical Gain in Core-only CdSe and Core/Crown CdSe/CdS 3.5 monolayer Nanoplatelets.** — C 9.2
Carmelita Rodà, Alessio Di Giacomo, Pieter Geiregat, Iwan Moreels
Physics and Chemistry of Nanostructures, Department of Chemistry, Ghent University, 9000 Ghent, Belgium

**17:30** **Amplification of spontaneous emission and lasing in optical waveguides integrating lead-free perovskite thin films** — C 9.3
Juan P. Martínez-Pastor, Isaac Suárez, Vladimir S. Chirvony, Jesús Sánchez-Díaz, Rafael S. Sánchez, Iván Mora-Seró.
Juan P. Martínez-Pastor, Vladimir S. Chirvony, UMDO, Instituto de Ciencia de los Materiales, Universidad de Valencia, Valencia 46980, Spain, Isaac Suárez, Escuela Técnica Superior de Ingeniería, Universidad de Valencia, Valencia 46100, Spain, Jesús Sánchez-Díaz, Rafael S. Sánchez, and Iván Mora-Seró, Institute of Advanced Materials (INAM), Universitat Jaume I, Castelló de la Plana, Castelló 12006, Spain.

**17:45** **Discussion**

**Wednesday june 1**

## Nanocrystals doping : Jean-Francois Dayen

**09:00** INV **Heterovalent doped quantum dots and heterostructures to metal under large lattice mismatch** — C 10.1
Jiatao Zhang1*
1. Beijing Key Laboratory of Construction Tailorable Advanced Functional Materials and Green Applications, School of chemistry and chemical engineering, Beijing Institute of Technology, Beijing, 100081, China

**09:30** **Correlation between localization of dopants and optoelectronic properties of Si-nanocrystals formed in P-doped SiO/SiO2 layers** — C 10.2
A. E. Giba (1,2), F. Trad (1), M. Stoffel (1), X. Devaux (1), D. Zhigunov (3), A. Bouché (1), S. Geiskopf (1), R. Demoulin (4), P. Pareige (4), E. Talbot (4), M. Vergnat (1), H. Rinnert (1)
(1) Université de Lorraine, CNRS, Institut Jean Lamour, F-54000 Nancy-France (2) National Institute of Laser Enhanced Sciences, Cairo University, Giza 12613, Egypt (3) Skolkovo Institute of Science and Technology, Bolshoy Boulevard 30, bld. 1, 121205 Moscow, Russia (4) Normandie Université, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen-France

**09:45** **Al, Ga or In-Doped Zinc Oxide Plasmonic Nanoparticles prepared by solvothermal synthesis for IR & optoelectronic applications** — C 10.3
Alexandre DA SILVA, Cédric VANCAEYZEELE, Pierre-Henri AUBERT, Frédéric VIDAL, Laurent DUPONT
LPPI, CY Cergy-Paris University , LPPI, CY Cergy-Paris University , LPPI, CY Cergy-Paris University , LPPI, CY Cergy-Paris University , Optics department, IMT Atlantique

**10:00** **Explanation of the detected sigmoidal feature in the temperature-dependent photoluminescence measurements of InAs quantum dots** — C 10.4
Rihani Jawher(a), Mehrez Oueslati(b), Vincent Sallet(c), Jean-Christophe Harmand(d), and Radhwen Chtourou(a)
(a): Laboratoire de Photovoltaïque de Semiconducteurs et de Nanostructures, Centre de Recherche des Sciences et Technologie de l?Energie, BP. 95, Hammam-Lif 2050, Tunisia. (b): Laboratoire de Nanomatériaux, Nanotechnologie et Energie (L2NE), Faculté des Sciences de Tunis, Université de Tunis El Manar, 2092 Tunis, Tunisia. (c): Groupe d'Etude de la Matière Condensée (GEMAC), CNRS, Université St Quentin en Yvelines, Université Paris-Saclay, 45 avenue des Etats-Unis, 78035 Versailles, France. (d): Laboratoire de Photonique et de Nanostructures, CNRS Route de Nozay 91 460, Marcoussis, France.

**10:15** **Reabsorption-free plastic scintillators based on engineered doped nanocrystals** — C 10.5
Francesco Carulli, Francesca Cova, Luca Gironi, Franco Meinardi, Anna Vedda, Sergio Brovelli
Francesco Carulli, Francesca Cova, Franco Meinardi, Anna Vedda, Sergio Brovelli, Dipartimento di Scienza dei Materiali, Università degli Studi di Milano-Bicocca, 20125 Milano, Italy. Luca Gironi, Dipartimento di Fisica, Università degli Studi di Milano-Bicocca, 20125 Milano, Italy.

**10:30** **Discussion**

**10:45**

## Nanomaterial for optoelectronic devices III : Sergio Brovelli

**11:15** **pMoOx-nMoS2 Heterojunction Assembly for Tunable and Efficient Optoelectronic Devices** — C 12.1
Rajesh Kumar Ulaganathan, Ganesh Ghimire, Denys I. Miakota, and Stela Canulescu
Technical University of Denmark

**11:30** **Emission mechanism analysis of Green InGaN/GaN light-emitting diodes with the Si-doped graded short-period superlattice (GSL).** — C 12.2
Sanam SaeidNahaei1, DongKun LEE1, Kim Geun-Hyeong2, Jin Soo Kim3, Jong Su Kim1*
1 Department of Physics, Yeungnam University, Geyongsan 38541, Korea. 2Department of Physics, Kyungwoon University, Gumi 13557, Korea. 3Division of Advanced Materials Engineering and Research Center of Advanced Materials Development, Chonbuk National University, Jeonju 561-756, South Korea.



**11:45** **Silicon QD decorated Silicon nitride Films : Optical emission and photo conductivity** — C 12.3
Santanu Ghosh, Harsh Gupta, Pariksha Malik and Pankaj Srivastava
Nanostech Laboratory, Department of Physics, Indian Institute of Technology Delhi, New Delhi-110016, India

**12:00** **Discussion**

**12:15** **Lunch and Plenary**

## Nanostructures for IR application : Jean-Francois Dayen

**15:00** INV **Infrared Colloidal Quantum Optoelectronics: LEDs and Lasers** — C 12.1
Gerasimos Konstantatos
gerasimos.konstantatos@icfo.eu

**15:30** **Optically-pumped near infrared stimulated emission in PbS colloidal quantum dots LEDs** — C 11.1
Nima Taghipour, Ibrahim Tanriover, Mariona Dalmases, Guy L. Whitworth, Christina Graham, Valerio Purneri, Koray Aydin, and Gerasimos Konstantatos
Nima Taghipour (1), Ibrahim Tanriover (2), Mariona Dalmases (1), Guy L. Whitworth (1), Christina Graham (1), Valerio Purneri (1),(3), Koray Aydin (2), and Gerasimos Konstantatos (1), (3) (1) ICFO, Institut de Ciències Fotòniques, The Barcelona Institute of Science and Technology, 08860 Barcelona, Spain (2) Department of Electrical and Computer Engineering, Northwestern University, Evanston, Illinois 60208, USA (3) ICREA, Institucio? Catalana de Recerca i Estudis Avançats, 08010 Barcelona, Spain

**15:45** **Optical detector of explosive precursors based on PbS colloidal quantum dots** — C 11.2
Mitri, F.(1)*, De Iacovo, A.(1), De Santis, S.(1), Giansante, C. (2), Sotgiu, G.(1), Colace, L. *corresponding author
(1) Department of Industrial, Electronics and Mechanical Engineering, Univ. Roma Tre, Italy, (2) CNR Nanotec, Istituto di Nanotecnologia, Italy,

**16:00** **Strained Ge-rich SiGe nanocrystals in nanocrystallized HfO2 layers for extended VIS-SWIR photoelectric sensitivity** — C 11.3
Ana-Maria Lepadatu (1), Catalin Palade (1), Adrian Slav (1), Valentin Serban Teodorescu (1,2) , Toma Stoica (1), Magdalena Lidia Ciurea (1,2)
(1) National Institute of Materials Physics, 405A Atomistilor Street, 077125 Magurele, Romania, (2) Academy of Romanian Scientists, 54 Splaiul Independentei, 050094 Bucharest, Romania

**16:15** **Discussion**

**16:30**

## : TBD

**16:45** **Capacitance characterization of a-Si:H/c-Si heterojunction solar cells based on array of silicon nanowires formed by dry etching** — C 13.1
Baranov, A.I.*(1,2), Morozov, I.A.(1), Uvarov, A.V.(1), Shugurov, K. Yu.(1), Vyacheslavova, E.A.(1), Maksimova, A.A.(1), Gudovskikh, A.S.(1,2), Dönerçark, E.(3) & Turan, R.(3)
(1) Alferov University, Russia. (2) St Petersburg Electrotechnical University «LETI», Russia. (3) Middle East Technical University ? Center for Solar Energy Research and Application (METU-GÜNAM), Turkey * lead presenter

**16:45** **Optical and Magneto-Optical Properties of Donor-Bound Excitons in Vacancy-Engineered Colloidal Nanocrystals** — C 13.2
Francesco Carulli, Valerio Pinchetti, Matteo L. Zaffalon, Andrea Camellini, Silvia Rotta Loria, Fabrizio Moro, Marco Fanciulli, Margherita Zavelani-Rossi, Francesco Meinardi, Scott A. Crooker, and Sergio Brovelli*
Francesco Carulli, Valerio Pinchetti, Matteo L. Zaffalon, Fabrizio Moro, Marco Fanciulli, Francesco Meinardi, Sergio Brovelli Dipartimento di Scienza dei Materiali, Università degli Studi di Milano-Bicocca, 20125 Milano, Italy. Andrea Camellini, Silvia Rotta Loria, Margherita Zavelani-Rossi, Dipartimento di Energia, Politecnico di Milano, IT-20133 Milano, Italy. Scott A. Crooker, National High Magnetic Field Laboratory, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, United States.

**16:45** **Near field optical excitation in subwavelength Light funnel arrays** **C 13.3**
Ankit Chauhan1, Ashish Prajapati1 and Gil Shalev1,2*
1. School of Electrical & Computer Engineering, Ben-Gurion University of the Negev, POB 653, Beer-Sheva 8410501, Israel 2. The Ilse-Katz Institute for Nanoscale Science & Technology, Ben-Gurion University of the Negev, POB 653, Beer-Sheva 8410501, Israel. *E-mail: glshalev@bgu.ac.il

**16:45** **Aluminum nanostructures decorated Porous silicon for multicrystalline Silicon Passivation** **C 13.4**
B. Bouktif, W. Dimassi and M. Ben Rabha
LaNSER, Research and Technology Centre of Energy (CRTEn), BorjCedriaTechnopark, BP.95, Hammam-Lif 2050, Tunisia

**16:45** **Inkjet printing lead-free TEA2SnI4 perovskite for next generation red light emitting devices** **C 13.5**
G. Vescio,1 J.L. Frieiro,1 D.Dirin,2 S. Hernández,1 A. Cirera,1 M.Kovalenko,2 B. Garrido1.
1) MIND-IN2UB, Department of Electronics and Biomedical Engineering, Universitat de Barcelona, Martí i Franquès 1, 08028 Barcelona (Spain) 2) ETH Zürich, Kovalenko Lab - Functional Inorganic Materials, Anorganische Funktionsmaterialien, Vladimir-Prelog-Weg 1-5/10, 8093 Zürich, (Switzerland)

**16:45** **Using NiOx nanoporous layer as the HIL for fabricating quantum dot light-emitting diodes** **C 13.6**
Wei-Sheng Chen, Sheng-Hsiung Yang
Institute of Lighting and Energy Photonics, National Yang Ming Chiao Tung University

**16:45** **Utilization of NiOx thin film or nanoporous layer as the HTL for fabricating inverted perovskite solar cells** **C 13.7**
Zhang-Wei Huang, Sheng-Hsiung Yang
Institute of Lighting and Energy Photonics, National Yang Ming Chiao Tung University

**16:45** **Sol-gel IV-VI semiconductor quantum dots-doped inorganic thin films for temperature detection devices** **C 13.8**
Elisa, M.*(1), Iordache, S. M.(1), Iordache, A-M.(1), Vasiliu, I. C.(1), Pana, I.(1), Enculescu, M.(2), Elosua Aguado, C.(3) (4), Arregui, F. J.(3), Lopez D.(3), Ulieru, D.(5), Vila, X.(5), Caridad Hernanández, J.(6), Casanova González, M. Á.(6), de Paz Santana, J. F.(7), Nicoara A-I. (8), Eftimie M. (8).
(1) National Institute for R & D for Optoelectronics-INOE 2000, Romania (2) National Institute of Materials Physics, Magurele, Jud. Ilfov, 077125, Romania (3) Public University of Navarre, Spain (4) Institute of Smart Cities (ISC), Public University of Navarre, Spain (5) SITEX 45, Bucharest, 022543, Romania (6) Automation of The Internet of Things SL, AlfaIoT, Spain (7) University of Salamanca, Spain (8) Politehnica University of Bucharest, 011061, Romania

**16:45** **The influence of bright and dark excitons on the trap-assisted recombination** **C 13.9**
Jedrzej Szmytkowski
Gdansk University of Technology, Gdansk, Poland

**16:45** **Effect of MEH-PPV deposition on the chemical composition and the photoluminescence properties of silicon nanowires** **C 13.10**
Lobna Jerbi, Mehdi Rahmani, Hosni Ajlani, Mohammed Guendouz, Abdelaziz Meftah.
UMR FOTON, CNRS, Université de Rennes 1, Enssat, BP 80518, 6 rue Kerampont, F22305, Lannion, France

**16:45** **Cooperative Visible Light Communication to Support Indoor Guidance Services** **C 13.11**
M. Vieira (1,2,3), M. A. Vieira (1,2), P. Louro (1,2), P. Vieira (1,4)
(1) Electronics Telecommunication and Computer Dept. ISEL, R. Conselheiro Emídio Navarro, 1959-007 Lisboa, Portugal (2) CTS-UNINOVA, Quinta da Torre, Monte da Caparica, 2829-516, Caparica, Portugal. (3) DEE-FCT-UNL, Quinta da Torre, Monte da Caparica, 2829-516, Caparica, Portugal. (4) Instituto de Telecomunicações, Instituto Superior Técnico, 1049-001, Lisboa, Portugal

**16:45** **Modelling of indoors Visible Light Communication links** **C 13.12**
P. Louro (1,2), M. Vieira (1,2,3), M. A. Vieira (2),P. Vieira(1,4)
(1) Electronics Telecommunication and Computer Dept. ISEL, R. Conselheiro Emídio Navarro, 1949-007 Lisboa, Portugal (2) CTS-UNINOVA, Quinta da Torre, Monte da Caparica, 2829-516, Caparica, Portugal. (3) DEE-FCT-UNL, Quinta da Torre, Monte da Caparica, 2829-516, Caparica, Portugal. (4) Instituto de Telecomunicações, Instituto Superior Técnico, 1049-001, Lisboa, Portugal



**16:45** **Effect of Deposition of Submonolayer Cs Films on the Density of Electronic States and the Depth of the Output Zone of CoSi2/Si(1** **C 13.13**
Umirzakov B.E., Bekpulatov I.R., Turapov I.Kh., Igamov B.D.
Tashkent state technical university, bekpulatov85@rambler.ru, ilkhomjon31121985@gmail.com

**16:45** **Obtaining a two-layer system silicide – silicon** **C 13.14**
Normurodov M.T., Umirzakov B.E., Bekpulatov I.R., Normurodov D.A., Kholmukhamedova V.Kh.
Karshi state university and Tashkent state technical university, bekpulatov85@rambler.ru, ilkhomjon31121985@gmail.com

**16:45** **Influence of various actions on the composition and structure of the surface of single-crystal Si** **C 13.15**
Umirzakov B.E., Bekpulatov I.R., Tursunmetova Z.A., Khujaniyazov J.B., Ibragimova B.V.
Tashkent State Technical University named after I.A. Karimov, University str., 2, Tashkent, 100095, Uzbekistan Research Institute of Semiconductor Physics and Microelectronics At the National University named after Mirzo Ulugbek, Tashkent, 100057 Uzbekistan *e-mail: bekpulatov85@rambler.ru

**16:45** **On-site Graphene Formed on Nanoimprinted Si Nanowires and the Assembled Schottky Junction Photovoltaic Cells** **C 13.16**
Wipakorn Jevasuwan, Steaphan M. Wallace, Yoshimasa Sugimoto, and Naoki Fukata
International Center for Materials Nanoarchitectonics, National Institute for Materials Science, 1-1 Namiki Tsukuba Ibaraki JAPAN 305-0044

**16:45** **Stable and ultraviolet-enhanced broadband photodetectors based on Si nanowire arrays-Cs3Cu2I5 nanocrystals hybrid structures** **C 13.17**
Wenqing Liang et al.
Sichuan University

**16:45** **Optical properties of rough nanowires with silver nanoparticles** **C 13.18**
Havryliuk O.O., Tkachuk O. I., Semchuk O.Yu., Biliuk A.A.
Chuiko Institute of Surface Chemistry NAS of Ukraine

**16:45** **Twist angle dependence of MoS2/WSe2 heterostructures on activation energy of interlayer exciton** **C 13.19**
Kairi Yamase1, Naoto Horikawa1, Kenji Watanabe2, Takashi Taniguchi2, Yusuke Hoshi1
1 Tokyo City University□2 National Institute for Materials Science

**16:45** **Using rhodamine 6G and phloxine B organic dyes as photosensitizers for inkjet-printed indium oxide phototransistors** **C 13.20**
Liu F. (1)*, Gillan L. (1), Leppäniemi J. (1).
(1)VTT Technical Research Centre of Finland, Ltd, Finland * lead presenter

**16:45** **Effect of thermal treatment on electrical properties of hBN-encapsulated MoTe2** **C 13.21**
Y. Odagiri1, K. Watanabe2, T. Taniguchi2, and Y. Hoshi1
1 Tokyo City University, Japan 2 National Institute for Materials Science, Japan

**16:45** **Color tuning of a TADF blue OLED by using a fluorescent dopant** **C 13.22**
Dhruvajyoti Barah, Subhamoy Sahoo, Jayeeta Bhattacharyya, Debdutta Ray
Department of Electrical Engineering, Indian Institute of Technology Madras, Chennai 600036, India, Department of Physics, Indian Institute of Technology Madras, Chennai 600036, India, Department of Physics, Indian Institute of Technology Madras, Chennai 600036, India, Department of Electrical Engineering, Indian Institute of Technology Madras, Chennai 600036, India

**16:45** **Building quasi-monocrystalline Cu2O photovoltaic thin film from nanocube building blocks** **C 13.23**
Anna Capitaine, Beniamino Sciacca
Aix Marseille Univ, CINaM, CNRS, CINaM

**16:45** **Oxygen plasma treatment to engineer defect complexes in ZnO nanowires grown by chemical bath deposition** **C 13.24**
Dieulesaint, A.*(1), Villafuerte, J. (1,2), Chaix-Pluchery, O. (1), Weber, M. (1), Donatini, F. (2), Pernot, J. (2), Bès, A. (3), Lacoste, A. (3), Consonni, V. (1), & Sarigiannidou, E. (1).
(1)Université Grenoble Alpes, CNRS, Grenoble INP, LMGP, F-38000 Grenoble, France (2)Université Grenoble Alpes, CNRS, Grenoble INP, Institut NEEL, F-38000 Grenoble, France (3)Université Grenoble Alpes, CNRS, IN2P3, LPSC, F-38000 Grenoble, France

**16:45** **Dispersion of the vibrational and electronic excitations in 3D crystals of MOS2 and their 2D-monolayers 1L-MOS2** **C 13.25**
Viktor Gubanov, Antonina Naumenko
Faculty of Physics, Taras Shevchenko National University of Kyiv

**16:45** **Stoichiometry tunability of Cesium-Copper-Iodide synthesized by controlling the precursors concentration using a simple one-pot** **C 13.26**
J.D. Forero, S. Hernández, J.L. Friero, S. González-Torres, G. Mathiazhagan, G. Vescio, B. Garrido, and A. Cirera.
1) MIND, Department of Electronics and Biomedical Engineering, Universitat de Barcelona, Martí i Franquès 1, E-08028, Barcelona, Spain. 2) Institute of Nanoscience and Nanotechnology (IN2UB), Universitat de Barcelona, Av. Joan XXIII S/N, E-08028, Barcelona, Spain.

**16:45** **Study of Small Molecule Charge Transport Layers in Solution-Based Ambient Air Processed Perovskite Light Emitting Diodes** **C 13.27**
G. Mathiazhagan* (1,2), S. González-Torres (1,2), S. Gimenez (1,2), J.D. Forero (1,2), G. Vescio (1,2), A. Cirera (1,2), B. Garrido (1,2)
(1) MIND, Department of Electronics and Biomedical Engineering, Universitat de Barcelona, Martí i Franquès 1, E-08028, Barcelona, Spain: (2) Institute of Nanoscience and Nanotechnology (IN2UB), Universitat de Barcelona, Av. Joan XXIII S/N, E-08028, Barcelona, Spain

**16:45** **Comparison of performance of inkjet-printed and spin-coated SnO2/NiO heterojunctions** **C 13.28**
S. González-Torres(1), G. Mathiazhagan(1), J. L. Frieiro(1), G. Vescio(1), S. Giménez(1), J.D. Forero(1), M. Oszajca(2), N. Lüchinger(2), M. Rossier(2), A. Hauser(2), F. Linardi(2), S. Hernández(1), A. Cirera(1), B. Garrido(1)
1) MIND-IN2UB, Department of Electronics and Biomedical Engineering, Universitat de Barcelona, Martí i Franquès 1, 08028 Barcelona (Spain), 2) Avantama AG, Laubisruetistrasse 50, Staefa 8712, Switzerland

**16:45** **Formation of radial a-Si:H p-i-n solar cells on silicon nanowires arrays toward flexible photovoltaics** **C 13.29**
Vyacheslavova E.A.*(1), Uvarov A.V.(1), Baranov A.I.(1), Maksimova A.A.(1), Gudovskikh A.S.(1,2).
(1) St Petersburg Academic University, 194021, Saint Petersburg, Russia. (2) St Petersburg Electrotechnical University «LETI»», 197376, Saint Petersburg, Russia.
*lead presenter

**16:45** **Synthesis and characterization of the ternary nitride semiconductor Zn2VN3: theoretical prediction, combinatorial screening, and** **C 13.30**
Siarhei Zhuk,1 Andrey A. Kistanov,2 Simon C. Boehme,1,3 Noémie Ott,1 Fabio La Mattina,1 Michael Stiefel,1 Maksym V. Kovalenko,1,3 Sebastian Siol1
1) Empa ? Swiss Federal Laboratories for Materials Science and Technology, 8600 Dübendorf, Switzerland, 2) Nano and Molecular Systems Research Unit, University of Oulu, 90014 Oulu, Finland, 3) Laboratory of Inorganic Chemistry, Department of Chemistry and Applied Bioscience, ETH Zürich, 8093 Zürich, Switzerland

**16:45** **Metal oxide core-shell nanowires decorated with silver nanoparticles prepared by a straightforward dry approach** **C 13.31**
Andreea Costas (1)*, Nicoleta Preda (1), Andrei Kuncser (1), Nicoleta Apostol (1), Carmen Curutiu (2) and Ionut Enculescu (1)
(1) National Institute of Material Physics, 405A Atomistilor Street, 077125, Magurele, Romania (2) University of Bucharest, Faculty of Biology, Microbiology Immunology Department, Aleea Portocalelor 1-3, 060101, Bucharest, Romania

**16:45** **Enhancement of photoelectrochemical properties of hematite thin films by loading iron phosphate co-catalyst** **C 13.32**
Fatemeh Parveh, Amin Yourdkhani and Reza Poursalehi
Materials Engineering Department, Tarbiat Modares University, Tehran, Iran.
Abstract:

**16:45** **Crystal structure and band zones of Si nanosized phases created at variuos depths of the surface region of SiO2** **C 13.33**
B.E.Umirzakov, G.X. Allayarova, A.K.Tashatov
B.E.Umirzakov

**16:45** **Determination of kinetic characteristics Thermal Desorption of K Atoms and Ions during the Adsorption of NaCl and RbCl Molecules** **C 13.34**
G.T. Rakhmanov
National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan



**16:45** **Preparation, characterization and optical properties of β-Ga2O3 nano-formations on Ga2Se3 substrate for nanoelectronics** **C 13.35**
Veaceslav Sprincean1, Liviu Leontie2, Silviu Gurlui2, Oleg Lupan3,4, Sandra Hansen4, Rainer Adeling4, Tudor Braniște5, Mihail Caraman1
1Faculty of Physics and Engineering, Moldova State University, 60 Alexei Mateevici Str., MD-2009, Chisinau, Republic of Moldova, 2Faculty of Physics, Alexandru Ioan Cuza University of Iasi, Bulevardul Carol I, Nr. 11, RO-700506 Iasi, Romania, 3Center for Nanotechnology and Nanosensors, Department of Microelectronics and Biomedical Engineering, Technical University of Moldova, 168, Stefan cel Mare Av., MD-2004, Chisinau, Republic of Moldova, 4Functional Nanomaterials, Faculty of Engineering, Institute for Materials Science, Kiel University, Kaiserstrasse 2, D-24143, Kiel, Germany, 5National Center for Materials Studyand Testing, Technical University of Moldova, Stefan cel Mare Av. 168, MD-2004 Chisinau, Moldova.

**16:45** **Changing the electronic structure of single-crystal Ge by various methods** **C 13.36**
D.A. Tashmukhamedova, B.E. Umirzakov, M.B. Yusupzhanova, S.T. Abraeva
Tashkent state technical university, Tashkent, Uzbekistan, 100095

**16:45** **Supramolecular nanostructures based on S-Heptazine for photocatalytic reactions** **C 13.37**
Dennis Schröder*, Felix Wenzel, Klaus Kreger and Hans.-Werner Schmidt
Macromolecular Chemistry I and Bavarian Polymer Institute, University of Bayreuth, 95440 Bayreuth, Germany

**16:45** **Synthesis and characterization of lead-free cesium titanium bromide perovskites** **C 13.38**
Girija Sankar Mahapatra, Ajith Kumar K and Biplab K Patra*(Corresponding Author)
Email- girijamahpatra@gmail.com Email- bkpatra@immt.res.in (Corresponding Author)
Materials Chemistry Department, CSIR- Institute of Minerals and Materials Technology, Bhubaneswar, 751013, India .

**16:45** **Growth modes and chemical phase separation in GaP1-xNx layers grown by chemical beam epitaxy on nominally (001)-oriented Si** **C 13.39**
K. Ben Saddik*(1), R. Volkov(2), J. Lähnemann(3), J. Grandal(4), N. Borgardt(2), B. J. García(1,5), S. Fernández-Garrido(1,5)
(1) Electronics and Semiconductors Group (ElySe), Applied Physics Department, Universidad Autónoma de Madrid, 28049 Madrid, Spain, (2) Department of Electron Microscopy Lab, National Research University of Electronic Technology MIET, 124498 Zelenograd, Russia, (3) Paul-Drude-Institut für Festkörperelektronik, Leibniz-Institut im Forschungsverbund Berlin e.V., Hausvogteiplatz 5?7, 10117 Berlin, Germany, (4) ISOM, Universidad Politécnica de Madrid, Avda. Complutense 30, 28040 Madrid, Spain, (5) Instituto Nicolás Cabrera, Universidad Autónoma de Madrid, 28049 Madrid, Spain, * lead presenter

**16:45** **Structural and optical properties of sol-gel glasses with copper selenide nanoparticles: SANS study and DDA simulation** **C 13.40**
V.S. Gurin, A.A. Alexeenko, A.V. Rutkauskas, Yu.E. Gorshkova, S.E. Kichanov, D.P. Kozlenko
Research Institute for Physical Chemical Problems, Minsk, Belarus, Gomel State Technical University, Gomel, Belarus, Joint Institute for Nuclear Research, Dubna, Russia

**16:45** **Metal oxide plasmonic nanocrystals for infrared modulation** **C 13.41**
Jonathan Chrun (1), Alexandre Khaldi (1), Cédric Vancaeyzeele (2), Pierre-Henri Aubert (2), Frédéric Vidal (2), Laurent Dupont (1)
(1) Optics department, Institut Mines-Télécom Atlantique, 29280 Plouzané, France , (2) Laboratoire de Physicochimie des Polymères et des Interfaces, CY Université, 95000 Cergy, France

**16:45** **Inkjet printing of ternary copper halide Cs3Cu2I5 perovskite nanocrystals for next generation blue light emitting devices** **C 13.42**
J.L. Frieiro,1 G. Vescio,1 A. F. Gualdrón-Reyes,2 S. Hernández,1 A. Cirera,1 I. Mora-Seró,2 B. Garrido1.
1) MIND-IN2UB, Department of Electronics and Biomedical Engineering, Universitat de Barcelona, Martí i Franquès 1, 08028 Barcelona (Spain) 2) INAM, Universitat Jaume I (UJI), Avenida de Vicent Sos Baynat s/n, 12071 Castelló de la Plana (Spain)

**18:00** **E-MRS EU-40 Materials Prize & MRS Mid-Career Researcher Award Presentations**

## Thursday june 2

### Synthesis and optical properties II : Jean-Francois Dayen

**09:00** INV **Controlling the surface chemistry of nanoparticle to reach thicker semiconductor nanoplatelets of various shapes** — C 14.1
Sandrine Ithurria
Sandrine.ithurria@espci.fr

**09:30** **Influence of the second sphere of coordination on the control of indium phosphide nanocrystals synthesis** — C 14.2
Ferrari Fabio, Swain Robert, McVey Benjamin, Bakkouche Kaltoum, Chaudret Bruno, Nayral Céline, Delpech Fabien
Laboratoire de Physique et Chimie des Nano-Objets, UMR 5215 INSA, CNRS, UPS, 135 avenue de Rangueil, F-31077 Toulouse Cedex 4, France

**09:45** **Zero-dimensional Gua3SbCl6 crystals as intrinsically reabsorption-free scintillators for radiation detection** — C 14.3
Francesca Cova, Valerio Pinchetti, Ye Wu, Luca Gironi, Anna Vedda, Liberato Manna, and Sergio Brovelli
Francesca Cova, Anna Vedda, Valerio Pinchetti, Sergio Brovelli, Dipartimento di Scienza dei Materiali, Università degli Studi di Milano-Bicocca, 20125 Milano, Italy. Luca Gironi, Dipartimento di Fisica, Università degli Studi di Milano-Bicocca, 20125 Milano, Italy. Ye Wu, School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing 210094, People&#8217,s Republic of China. Liberato Manna, Istituto Italiano di Tecnologia, Via Morego 30, Genova 16163, Italy.

**10:00** **Impact of Crown Size on the Optical Gain Characteristics of Core/Crown (CdSe/CdS) Nanoplatelets** — C 14.4
M. Chandra Sekhar?, Ali Hossain Khan?, Carmelita Rodá?, Jari Leemans??, Zeger Hens??, Iwan Moreels?
? - Physics and Chemistry of Nanostructures, Ghent University, Ghent, Belgium
? - Center for Nano and Biophotonics, Ghent University, Ghent, Belgium ? - Department of Chemical Biological & Macromolecular Sciences, S.N. Bose National Centre for Basic Sciences, Kolkata, India

**10:15** **The role of defects in WSe2 nanoflakes: Activation and defect passivation result high photoelectrochemical HER activity** — C 14.5
Péter S. Tóth, Gábor Szabó, Csaba Janáky
Department of Physical Chemistry and Materials Science, Interdisciplinary Excellence Center, University of Szeged, Rerrich Sq. 1., Szeged, 6720, Hungary

**10:30** **Discussion**

**10:45**

### Synthesis and optical properties III : Iwan Moreels

**11:00** **Large-area 2D-TMDs heterostructures engineered for enhanced light harvesting** — C 15.1
Gardella, M.*(1), Zambito, G. (1), Ferrando, G. (1) Giordano, M.C. (1), Buatier de Mongeot, F. (1)
(1) Dip. di Fisica, Università di Genova, Via Dodecaneso 33, 16146 Genova, Italy

**11:15** **Synthesis of Ge_{1-x}Sn_{x} nanoparticles prepared under ambient conditions** — C 15.2
Søgaard, N.B.*(1), Bondesgaard, M.(1), Bertelsen, A.D.(1), Iversen, B.B.(1), Julsgaard, B.(1)
(1) Aarhus University, Denmark

**11:30** **Colloidal Synthesis Of Fluorescent Monolayer MoX2 (X = S, Se) Nanosheets Via a Design Of Experiments Approach** — C 15.3
Gabriele Pippia [a], Anastasia Rousaki [a], Matteo Barbone [b,c], Jonas Billet [a], Rosaria Brescia [d], Anatolii Polovitsyn [d], Beatriz Martín-García [d], Marko Petric [b,c], Amine Ben Mhenni [b], Isabel Van Driessche [a], Peter Vandenabeele [a], Kai Müller [b,c], Iwan Moreels [a]
[a] Ghent University, Department of Chemistry, Krijgslaan 281, 9000 Gent, Belgium, [b] Walter Schottky Institute, Technische Universität München, Am Coulombwall 4, D - 85748 Garching, Germany, [c] Munich Center for Quantum Science and Technology (MCQST), Schellingstrasse 4, 80799 Munich, Germany, [d] Istituto Italiano di Tecnologia, Via Morego 30, 16163 Genova, Italy,

**11:45** **Highly luminescent &#960,-radicals for optoelectronics ? design perspectives** — C 15.4
Petri Murto, Hugo Bronstein
University of Cambridge, United Kingdom



**12:00** **Discussion**

**12:15** **Lunch and Plenary**

### Advanced spectroscopy of nanostructures II : Jean-Francois Dayen

**15:00** INV **Exciton parameters in CdSe-based colloidal nanoplatelets** — C 16.1
E. Shornikova
TU Dortmund, Germany

**15:30** **Coulomb repulsions as a means of modulating electronic and optical properties of colloidal nanoplatelets** — C 16.2
Jordi Llusar, David F. Macias-Pinilla, Josep Planelles, Juan I. Climente
Departament de Química Física i Analítica, Universitat Jaume I, Castelló de la Plana, Spain, Insititute of Advanced Materials, Universitat Jaume I, Castelló de la Plana, Spain, Departament de Química Física i Analítica, Universitat Jaume I, Castelló de la Plana, Spain, Departament de Química Física i Analítica, Universitat Jaume I, Castelló de la Plana, Spain

**15:45** **Disruptive Green Optical Gain in Bulk-Like CdS Quantum Dots through Strong Band Gap Renormalization** — C 16.3
Ivo Tanghe, Isabella Wagner, Margarita Samoli, Kai Chen, Servet Ataberk Cayan, Ali Khan, Dries Van Thourhout, Justin Hodgkiss, Zeger Hens, Iwan Moreels, and Pieter Geiregat
1,2,3, 4,5, 2,3, 5,6,7, 2,3, 8, 1,2, 4,5, 2,3, 2,3, 2,3 (1): Photonics Research Group, Ghent University, 9000, Gent, Belgium (2): Center for Nano and Biophotonics (NB Photonics), Ghent University, Belgium (3): Physics and Chemistry of Nanostructures, Ghent University, 9000, Gent, Belgium (4): School of Chemical and Physical Sciences, Victoria University of Wellington, 6012, Wellington, New Zealand (5): MacDiarmid Institute for Advanced Materials and Nanotechnology, New Zealand. (6): Robinson Research Institute, Victoria University of Wellington, 6012, Wellington, New Zealand (7): The Dodd-Walls Centre for Photonic and Quantum Technologies, University of Otago, 9010, Dunedin, New Zealand (8): Department of Chemical, Biological & Macromolecular Sciences, S.N. Bose National Centre for Basic Sciences, JD Block, Sector-III, Salt Lake City, Kolkata 700106, India

**16:00** **Gain material for wide band amplification in long haul telecommunications** — C 16.4
Q. Hochart, R. S. Joshya, A. Balocchi, O. Delorme, C. Calo, A. Wilk, H. Carrère
LPCNO, III-V Lab

**16:15** **Discussion**

**16:30**

### Nanostructures for electronics : Valerio Pinchetti

**16:45** INV **Use of heteromaterial interactions to modify the properties of electronic materials** — C 17.1
J. Urban
LBL

**17:15** **A high-mobility hole bilayer in a germanium double quantum well** — C 17.3
Beatrice Ferrari, Alberto Tosato, Amir Sammak, Alexander R. Hamilton, Menno Veldhorst, Michele Virgilio and Giordano Scappucci
Affilitations: A. Tosato, A. Sammak, M. Veldhorst, G. Scappucci QuTech and Kavli Institute ofNanoscience Delft University ofTechnology PO Box 5046, Delft, GA 2600, The Netherlands B. M. Ferrari University of Milano-Bicocca Department of Material Science &#8211, Via R. Cozzi 55. 20125 Milano, Italy A. Sammak QuTech and TNO Stieltjesweg 1 Delft CK 2628, The Netherlands A. R. Hamilton School of Physics University of New South Wales Sydney, New South Wales 2052, Australia A. R. Hamilton ARC Centre of Excellence for Future Low-Energy Electronics Technologies University of New South Wales Sydney, New South Wales 2052, Australia M. Virgilio Dipartimento di Fisica &#8220,E. Fermi&#8221, Università di Pisa Largo Pontecorvo 3, Pisa 56127, Italy

**17:30** **Fabrication of OFET Using Self Synthesised Nanoparticle and Nanocomposite** — C 17.4
Sk Shahrukh, Achintya Dhar
Department of Physics, Indian Institute of Technology Kharagpur.

**17:45** **Discussion**

## Friday june 3

### Syntesis and optical properties III : Iwan Moreels

**09:00** INV **Phonon engineering in nanostructures: material design and innovative experimental techniques** **C 18.1**
M. De Luca,1,2 M. Y. Swinkels,1 D. de Matteis,1 Y. Kaur,1 M. Camponovo,1 C. Fasolato,1,3 X. Cartoixà,4 R. Rurali5 and I. Zardo1,*
1 Department of Physics, University of Basel, Basel, Switzerland 2 Physics Department, Sapienza University of Rome, Rome, Italy 3 Dipartimento di Fisica e Geologia, Universita degli Studi di Perugia, Perugia, Italy 4 Departament d?Enginyeria Electrònica, Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain 5 Institut de Ciència de Materials de Barcelona (ICMAB?CSIC), Campus de Bellaterra, Bellaterra, Barcelona, Spain *corresponding author: ilaria.zardo@unibas.ch

**09:30** **MIT- controlled plasmonic response of thermochromic materials** **C 18.2**
G. Savorianakis1, 2, *, A. Sergievskaya1, B. Maes3, M. Voué2 and S. Konstantinidis1
1Plasma-Surface Interaction Chemistry (ChIPS), University of Mons, 20 Place du Parc, Mons B-7000, Belgium 2Physics of Materials and Optics (LPMO), University of Mons, 20 Place du Parc, Mons B-7000, Belgium 3Micro- and Nanophotonic Materials (MMNP), University of Mons, 20 Place du Parc, Mons B-7000, Belgium

**09:45** **Intelligent Split Intersections: Communication through Visible Light.** **C 18.3**
M. A. Vieira (1,2), M. Vieira (1,2,3), P. Louro (1,2), P. Vieira (1,4)
(1)Electronics Telecommunication and Computer Dept. ISEL, R. Conselheiro Emídio Navarro, 1949-014 Lisboa, Portugal Tel: +351 21 8317290, Fax: +351 21 8317114, mv@isel.ipl.pt , (2) CTS-UNINOVA, Quinta da Torre, Monte da Caparica, 2829-516, Caparica, Portugal. (3) DEE-FCT-UNL, Quinta da Torre, Monte da Caparica, 2829-516, Caparica, Portugal (4) Instituto de Telecomunicações, Instituto Superior Técnico, 1049-001, Lisboa, Portugal

**10:00** **MOVPE growth of cubic GaN on GaAs (110) substrate?** **C 18.4**
I.Daldoul a*, S. Othmani a, A. Mballo b, P. Vuong b, J.P. Salvestrini b,c, N. Chaaben a
a Laboratoire de Recherche sur les Hétéro-Epitaxies et Applications, Faculté des Sciences de Monastir, 5019, Université de Monastir, Tunisia b International Research Lab Georgia Tech ? CNRS (IRL 2958), Georgia Tech Lorraine, 2 rue Marconi, 57070, Metz, France c School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, 30332, USA Corresponding author. E-mail address: imendaldoul9@gmail.com (I.Daldoul).

**10:15** **2D Materials Based van der Waals Heterostructures grown by Pulsed Laser Deposition** **C 18.5**
Martando Rath1, Cardin Julien2, Christophe Labbé2, Adrian David1, Wilfrid Prellier1, Ulrike Lüders1 and Arnaud Fouchet1
1 Normandie Univ, ENSICAEN, UNICAEN, CNRS, CRISMAT, 14000, Caen, France
2 CIMAP, Normandie Univ, ENSICAEN, UNICAEN, CNRS, 14000, Caen, France

**10:30** **Discussion**

**10:45**

### Advanced nanostructures characterization : Krishna Maity

**11:00** **Electron Microscopy and EDS analysis of InGaAs-InP Heterointerfaces in Horizontal Nanowires Grown with the TASE Process** **C 19.1**
Enrico Brugnolotto[1,2], Markus Scherrer[1], Heinz Schmid[1], Vihar Georgiev[2], Marilyne Sousa[1]
[1] IBM Research Europe - Zurich, Saeumerstrasse 4, 8803 Rueschlikon, Switzerland, [2] School of Engineering, University of Glasgow, Glasgow G12 8QQ, United Kingdom

**11:15** **Three-Dimensional Lithography on Silicon Nanowire Arrays** **C 19.2**
Fedja J. Wendisch and Gilles R. Bourret
University of Salzburg

**11:30** **Influence of the measuring tip-to-semiconductor contact on the overall electrical characterization of nanowire structures** **C 19.3**
Juliane Koch (1), Lisa Liborius (2), Peter Kleinschmidt(1), Nils Weimann (2), Werner Prost (2), Thomas Hannappel (1)
(1) Department of Mathematics and Natural Science, Institute for Physics, Fundamentals of energy materials, Ilmenau University of Technology, Ilmenau 98693, Germany, (2) Components for High Frequency Electronics (BHE), University of Duisburg-Essen, Duisburg 47057, Germany



**11:45** **Response of n-channel strained-Si MODFETs as sub-THz direct detectors** **C 19.4**
J. Delgado Notario, J. Calvo-Gallego, Y. M. Meziani, K. Fobelets, M. Ferrando Bataller, J. E. Velázquez-Pérez
CENTERA Laboratories, Institute of High Pressure Physics, Warsaw, Poland, NanoLab, University of Salamanca, 37008 Salamanca, Spain, NanoLab, University of Salamanca, 37008 Salamanca, Spain, Department of Electrical and Electronic Engineering, Imperial College, London SW7 2AZ, UK, Telecommunication Engineering School, Universitat Politècnica de Valencia, 46022 Valencia, Spain, NanoLab, University of Salamanca, 37008 Salamanca, Spain,

**12:00** **Discussion and Closing**

E-MRS European Materials Research Society

Spring Meeting 2022

May 30 | June 3
Virtual Conference

# SYMPOSIUM D1

## Materials for nanoelectronics and nanophotonics

*Symposium Organizers :*


Andreas SEIFERT, CIC nanoGUNE

Graziella MALANDRINO, Università degli Studi di Catania

Shashank MISHRA, Université Claude Bernard Lyon 1, CNRS

Yogendra MISHRA (Main organizer), University of Southern Denmark

## Monday may 30

**08:00** **Welcome and Introduction to the Symposium**

### Plasmonic Nanomaterials : Jost Adam, Yogendra Kumar Mishra, Ayan Chaudhuri

**08:15** INV **Engineering gold-based nanowires for plasmon mediated remote Raman sensor and for improving in- and out-coupling with light** **D1 01.1**
Funes-Hernando Daniel [1], Peláez-Fernández Mario [2], Winterauer Dominik [3], Mevellec Jean-Yves[1], Arenal Raúl [2,4], Batten Tim[3], Humbert Bernard [1], Bayle Maxime [1], Duvail Jean-Luc [1]
[1] Institut des Matériaux Jean Rouxel, UMR 6502 CNRS and Nantes University, Nantes, France [2] Laboratorio de Microscopias Avanzadas, Instituto de Nanociencia de Aragon, Universidad de Zaragoza, Zaragoza, Spain [3] Renishaw plc, New Mills, Wotton-under-Edge, United Kingdom [4] ARAID Foundation, 50018 Zaragoza, Spain

**08:45** **Economical, Facile Paper-based SERS Sensing Platform established by Aluminum Nanoparticles for Food Safety Analysis** **D1 01.1**
Chiao-Jung Su, Yu-Ling Chang, Yi-Chia Hsieh, Li-Chia Lu and Dehui Wan*
Institute of Biomedical Engineering and Frontier Research Center on Fundamental and Applied Sciences of Matters, National Tsing Hua University, Hsinchu, Taiwan, Department of Materials science and Engineering, National Tsing Hua University, Hsinchu, Taiwan

**09:15** **Interaction Study between Luminescent Gold Nanoclusters and Lipid Membranes: Framework for Biological Applications** **D1 01.2**
Regina M. Chiechio 1,2,8, Celia Marets 1, Pascale Even-Hernandez 1, Christelle Meriadec 3, Franck Artzner 3, , Rémi Leguevél 4, Helene Solhi 4, Marie Madeleine Gueguen4, Stephanie Dutertre 5, Xavier 5, Jean-Pierre Bazureau 1, Olivier Mignen 6,7, Paolo Musumeci 2, Maria Jose Lo Faro 2,8, Valerie Marchi 1*
1) Université Rennes 1, CNRS UMR 6226, Institut des Sciences Chimiques de Rennes, 35042 Rennes Cedex, France, 2) Dipartimento di Fisica e Astronomia "Ettore Majorana", Università degli Studi di Catania, Via S. Sofia 64, 95123 Catania, Italy. 3) CNRS, Institut de Physique de Rennes, UMR 6251, Université de Rennes 1, F-35000, Rennes, France 4) ImPACcell platform, Biosit, Université de Rennes 1, F-35043 Rennes, France, 5) Microscopy Rennes Imaging Centre, SFR Biosit, UMS CNRS 3480—US INSERM 018, Université de Rennes, 35000 Rennes, France 6) University of Brest, INSERM, Canalopathies et Signalisation Calcique, Brest, France, 7) University of Brest, INSERM, Lymphocytes B et auto-immunite´, Brest, France. 8) Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (CNR-IMM) UoS Catania, Via S. Sofia 64, 95123 Catania, Italy.

**09:30** **Plasmonic properties of nanocavities in patterned aluminum on suspended graphene** **D1 01.3**
Kenan Elibol and Peter A. van Aken
Max Planck Institute for Solid State Research, D-70569 Stuttgart, Germany

**09:45** **Ultrasmall Au6 nanoclusters displaying coherent photophysical behaviour** **D1 01.4**
Alice Sciortino, Sourov Chandra, Faisal Ahmed, Diao Li, Arijit Jana, Ville Liljeström, Hua Jiang, Leena-Sisko Johansson, Xi Chen, Nonappa, Thalappil Pradeep, Marco Cannas, Zhipei Sun, Olli Ikkala, Fabrizio Messina
University of Palermo, Aalto University, Aalto University, Aalto University, Indian Institute of Technology, Aalto University, Aalto University, Aalto University, Aalto University, Aalto University, Aalto University, Indian Institute of Technology, University of Palermo, Aalto University, Aalto University, University of Palermo,

**10:00** **A symmetry-based kinematic theory for designing chiral Au nanoparticles** **D1 01.5**
Bing Ni
University of Konstanz

**10:15** **Discussion**

**10:30**

### SERS Sensing : Yogendra Kumar Mishra, Duvail Jean-Luc, Dawid Janas

**10:45** **Self-assembly of Gold Nanoparticles on Porphyrin Monolayers Anchored on Inorganic Substrates** **D1 02.1**
Spitaleri, L.*(1) & Gulino, A. (1)
(1) Department of Chemical Sciences, University of Catania, and INSTM UdR of Catania, V.le A. Doria 6, 95125 Catania, Italy



**11:00** **Combination of plasmonic and dielectric properties by multivariate analysis for enhanced sensing** **D1 02.2**
Jaione Etxebarria-Elezgarai* (1), Luca Bergamini (2,3), Eneko Lopez (1), Jost Adam (4), Nerea Zabala (2,3), Javier Aizpurua (3), Andreas Seifert* (1,5)
(1) CIC nanoGUNE BRTA, Tolosa Hiribidea 76, 20018 San Sebastian, Spain (2) Department of Electricity and Electronics, FCT-ZTF, UPV-EHU, 48080 Bilbao, Spain (3) Materials Physics Center, CSIC-UPV/EHU and DPIC, 20018 San Sebastian, Spain (4) University of Southern Denmark, 6400 Sønderborg, Denmark (5) IKERBASQUE, Basque Foundation for Science, Euskadi Plaza 5, 48009 Bilbao, Spain

**11:15** **Metal-Free Cellulose-Based Platforms for Biomolecule Detection via Fluorescence and Surface Enhanced Raman Spectroscopy** **D1 02.3**
Agata Fularz, Sawsan Almohammed, and James H. Rice
Agata Fularz - School of Physics, University College Dublin, Dublin 4, Ireland Sawsan Almohammed - School of Physics, University College Dublin, Dublin 4, Ireland, Conway Institute of Biomolecular and Biomedical Research, University College Dublin, Dublin 4, Ireland James H. Rice - School of Physics, University College Dublin, Dublin 4, Ireland

**11:30** **Ultra-sensitive detection of the N protein of the SARS-CoV-2 using AgNPs/SiNWs substrate** **D1 02.4**
Sadok Kouz1,2*, Awatef Ouhibi1, Amal Raouafi3, Nathalie Lorrain2, Noureddine Raouafi3, Adel Moadhen1 and Mohammed Guendouz2
1Université de Tunis El Manar, Faculté des Sciences de Tunis, Laboratoire de Nanomatériaux Nanotechnologie et Energie (LR19ES23), 2092, Tunis El Manar, Tunisie 2UMR FOTON, CNRS, Université de Rennes 1, Enssat, BP 80518, 6 rue Kerampont, F22305, Lannion, France 3Université de Tunis El Manar, Faculté des Sciences de Tunis, Laboratoire de Chimie Analytique et Electrochimie (LR99ES15), sensor and biosensors group, 2092, Tunis El Manar, Tunisie

**11:45** **Engineering the structure and SERS enhancement factor of Au nanoparticle double layer by a sandwiched graphene flake** **D1 02.5**
András Pálinkás, György Molnár, Gábor Piszter, András Deák, Zoltán Osváth
Centre for Energy Research, Institute of Technical Physics and Materials Science, Budapest, Hungary

**12:00** **SERS performance of laser-ablated magneto-plasmonic nanoparticles** **D1 02.6**
Adomaviciute-Grabusove, S.*(1), Sablinskas, V. (1), Ceponkus, J. (1), Stankevicius, E. (2), Petrikaite,V (2)., Trusovas, R. (2) Zdaniauskiene, A. (2), Selskis, A. (2), Niaura, G. (1,2)
(1) Institute of Chemical Physics, Faculty of Physics, Vilnius University, Lithuania, (2) Center for Physical Sciences and Technology (FTMC), Lithuania, * lead presenter

**12:15** **Discussion**

**12:30** **Lunch**

### Perovskites QDs : Jost Adam, Yogendra Kumar Mishra, Dawid Janas

**13:00** **Solution approaches for the fabrication of all-inorganic halide perovskites: from-diketonate precursors to CsPbBr3 and CsCaF3** **D1 03.1**
Anna Lucia Pellegrino, Francesca Lo Presti, Lorenzo Sirna, Graziella Malandrino
Dipartimento di Scienze Chimiche, Università degli Studi di Catania, INSTM UdR Catania, Viale Andrea Doria 6, I-95125 Catania, Italy.

**13:15** **Quantum dot surface functionalization and characterization for temperature sensing** **D1 03.2**
Fanglei Guo1, Stijn Jooken1, Olivier Deschaume1, Wei Yu1, Wim Thielemans2, Carmen Bartic1
1 Soft Matter and Biophysics, Department of Physics and Astronomy, KU Leuven, 3001 Heverlee, Belgium, 2 Chemical Engineering, Kulak Kortrijk Campus, KU Leuven, 8500 Kortrijk, Belgium

**13:30** **Lanthanum nickelate films deposited from a novel heterobimetallic La- Ni complex as single-source precursor** **D1 03.3**
Matteo Bombaci, Francesca Lo Presti, Anna Lucia Pellegrino, and Graziella Malandrino
Dipartimento di Scienze Chimiche, Università degli studi di Catania V.le A. Doria 6, 95125 Catania Italy.

**13:45** **Strain control of the anomalous Hall conductivity in the chiral antiferromagnet Mn3NiN antiperovskite** **D1 03.4**
D. Torres-Amaris[1], Rafael González-Hernández[2], Aldo. H. Romero[3], and, A. C. Garcia-Castro[1]
[1]School of Physics, Universidad Industrial de Santander, Bucaramanga, Colombia, [2]Departamento de Física y Geociencias, Universidad del Norte, Barranquilla, Colombia, [3]Department of Physics and Astronomy, West Virginia University, Morgantown, United States.

**14:00** **Influence of varied pH on the photoluminescence properties of glutathione-coated AgInS2/ZnS quantum dots** **D1 03.5**
L. Borkovska1, T. Stara1, K. Kozoriz1, E. Nesterenko2, A. Rachkov2, J.-L. Doualan3, T. Kryshtab4
1 V. Lashkaryov Institute of Semiconductor Physics of NASU, 45 Pr. Nauky, Kyiv, Ukraine, 2 Institute of Molecular Biology and Genetics of NASU, 150 Zabolotnogo Str., Kyiv, Ukraine, 3 CIMAP, CEA-CNRS-ENSICAEN, Normandie Université, 6 Blvd Maréchal Juin, Caen, France, 4 Instituto Politécnico Nacional ? ESFM, Av. IPN, Ed.9 U.P.A.L.M., 07738 Mexico D.F., Mexico

**14:15** **Discussion**

## Thin Films Nanotechnology : Yogendra Kumar Mishra, Sugato Hajra, Jost Adam

**15:00** **Excitation of traveling guided modes and mode hybridization in the thin films** **D1 04.1**
Ashish Prajapati Gil Shalev
1 School of Electrical and Computer Engineering, Ben-Gurion University of the Negev, Israel 2 The Ilse-Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, POB 653, Beer-Sheva 8410501, Israel

**15:15** **A statistical approach for by-process segregation in Ge-rich GST** **D1 04.2**
Petroni, E. *(1), Serafini, A. (2), Codegoni, D. (2), Targa, P. (2), Mariani, L. (2), Scuderi, M. (3), Nicotra, G. (3) & Redaelli, A. (1)
(1) STMicroelectronics, TR&D, Agrate Brianza, Italy (2) STMicroelectronics, R2 Physical Lab, Agrate Brianza, Italy (3) CNR-IMM, Catania Headquarter, Strada VIII n.5 Zona Industriale, Catania 95121, Italy * lead presenter

**15:30** **Molecular simulation for the prediction of residual stress of (ultra-thin) films during deposition** **D1 04.3**
Germain Clavier, Shivraj Karewar, Olfa van den Sluis, Johan Hoefnagels
Eindhoven University of Technology (TUe), Mechanical engineering department

**15:45** **Defect segregation on silicon grain boundary : insight from topological analysis** **D1 04.4**
Rita Maji Julia Contreras-García Elena Degoli Eleonora Luppi
1. Dipartimento di Scienze e Metodi dell'Ingegneria, Università di Modena e Reggio Emilia, Via Amendola 2 Padiglione Tamburini, I-42122 Reggio Emilia, Italy 2. Laboratoire de Chimie Théorique, Sorbonne Université and CNRS, F-75005 Paris, France 3. Dipartimento di Scienze e Metodi dell'Ingegneria, Università di Modena e Reggio Emilia, Via Amendola 2 Padiglione Morselli, I-42122 Reggio Emilia, Italy Centro Interdipartimentale En & Tech, Via Amendola 2 Padiglione Morselli, I-42122 Reggio Emilia, Italy Centro S3, Istituto Nanoscienze-Consiglio Nazionale delle Ricerche (CNR-NANO), Via Campi 213/A, 41125 Modena, Italy 4. Laboratoire de Chimie Théorique, Sorbonne Université and CNRS, F-75005 Paris, France

**16:00** **Fabrication of silicon carbide trenches by an inductively coupled plasma reactive ion etching process** **D1 04.5**
Perricelli, F.* (1), Fragalà, M. E. (1) & Gulino, A. (1)
(1) Department of Chemical Sciences, University of Catania, and INSTM UdR of Catania, V.le A. Doria 6, 95125 Catania, Italy

**16:15** **Formation of InAs Islands on the InP(001) surface during annealing in an arsenic flux** **D1 04.6**
Kolosovsky, D.A., Dmitriev, D.V., Ponomarev, S.A., Toropov A.I., Zhuravlev K.S.
Rzhanov Institute of Semiconductor Physics, Novosibirsk 630090, Russian Federation

**16:30** **Effects of etching depth on crack generation in strained SiGe films on mesa-patterned Ge** **D1 04.7**
Youya Wagatsuma1, Rena Kanesawa1, Md. Mahfuz Alam1.2, Kazuya Okada1, Michihiro Yamada3, Kohei Hamaya3, and Kentarou Sawano1
1Advanced Research Laboratories, Tokyo City University, 8-15-1 Todoroki, Setagaya-Ku, Tokyo 158-0082, Japan, 2Department of Physics, University of Barishal, Barishal-8254, Bangladesh, 3Center for Spintronics Research Network, Graduate School of Engineering Science, Osaka University, Toyonaka, Osaka 560-8531, Japan

**16:45** **Discussion**



**Tuesday may 31**

## Photonics : Jost Adam, Yogendra Kumar Mishra, Ayan Chaudhuri

**08:00** **Azopolymer-based reconfigurable diffractive optical elements** **D1 05.1**
Francesco Reda *(1), Marcella Salvatore (1,2), Fabio Borbone (3,4), Pasqualino Maddalena (1,2,4), Antonio Ambrosio (4), Stefano Luigi Oscurato (1,2,4)
(1) Department of Physics "E. Pancini", University of Naples "Federico II", Complesso Universitario di Monte Sant'Angelo, Via Cintia, 80126 Naples, Italy, (2) Centro Servizi Metrologici e tecnologici Avanzati (CeSMA), University of Naples "Federico II", Complesso Universitario di Monte Sant'Angelo, Via Cintia 21, 80126, Naples, Italy, (3) Department of Chemical Sciences, University of Naples "Federico II", Complesso Universitario di Monte Sant'Angelo, Via Cintia, 80126 Naples, Italy, (4) CNST@POLIMI—Fondazione Istituto Italiano di Tecnologia, Via Pascoli 70, 20133 Milan, Italy,

**08:15** **Complex characterization of butterfly wing scale structural color and color modification for applications** **D1 05.2**
Kertész, K.*(1), Piszter, G.(1), Baji, Zs.(1), Bálint, Zs.(2) & Biró, L.P(1)
(1)Institute of Technical Physics and Materials Science, Centre for Energy Research, Konkoly-Thege Miklós út 29-33., 1121 Budapest, Hungary, (2)Hungarian Natural History Museum, Baross utca 13., 1088 Budapest, Hungary, * lead presenter

**08:30** **Photonic structures for tuning nanophosphor films emission** **D1 05.3**
Elena Cabello-Olmo, Gabriel Lozano, Hernán Míguez
Institute of Materials Science of Seville (Spanish National Research Council - University of Seville)

**09:00** **Nanocube epitaxy for the realisation of printable monocrystalline nanophotonic surfaces** **D1 05.4**
Anna Capitaine, Beniamino Sciacca
Aix-Marseille Univ, CINaM, CNRS, CINaM

**09:15** **Characterization of Carbazole based polymer and Polyfluorene derivatives for blue emitting flexible OLED devices** **D1 05.5**
K. Papadopoulos 1, D. Tselekidou 1, V. Kyriazopoulos 1,2, S. Kassavetis 1, A. K. Andreopoulou 3, K. Andrikopoulos 3, J. K. Kallitsis 3, M. Gioti 1
1 Nanotechnology Lab LTFN (Lab for Thin Films – Nanobiomaterials – Nanosystems – Nanometrology) Aristotle University of Thessaloniki, 54124, Thessaloniki, Greece, 2 Organic Electronic Technologies P.C. (OET), Antoni Tritsi 21B, GR-57001 Thessaloniki, Greece, 3 Department of Chemistry University of Patras, University Campus, Rio-Patras GR-26504, Greece

**09:30** **Ultrafast laser-based fabrication of Efficient Anti-reflective Silicon Nitride nano/microstructures for Optoelectronics applications** **D1 05.6**
Pariksha Malik, Santanu Ghosh, G.V. Prakash, Pankaj Srivastava
Department of Physics, Indian Institute of Technology Delhi, New Delhi, India

**09:45** **Discussion**

## Advanced Electronic Devices : Yogendra Kumar Mishra, Veronika Zadin, Dawid Janas

**10:00** INV **Molecular Building Blocks for the Next Generation of Computing** **D1 06.1**
Sreetosh Goswami
Centre for Nanoscience and Engineering (CeNSE), Indian Institute of Science (IISc), Bangalore

**10:30** INV **Self-compliance multilevel resistive switching in CMOS compatible WO3-x thin films** **D1 06.2**
Krishna Rudrapal, Venimadhav Adyam and Ayan Roy Chaudhuri
Materials Science Centre, Indian Institute of Technology Kharagpur, 721302 Kharagpur, West Bengal, India

**11:00** **Titanium carbide MXene thin film for resistive switching application** **D1 06.3**
Anamika Ashok, Subin P S, M K Jayaraj, Asha A S
Anamika Ashok - Nanomaterials for Emerging Solid state technology (NEST) laboratory, Department of Physics, Cochin University of Science and Technology, Subin P S- NanoPhotonic and OptoElectronic Devices (NPOED) laboratory, Department of Physics, Cochin University of Science and Technology, Dr. Asha A S- Nanomaterials for Emerging Solid state technology (NEST) laboratory, Department of Physics, Cochin University of Science and Technology, Centre of Excellence in Advanced Materials, Cochin University of Science and Technology, Prof M K Jayaraj - Calicut University

**11:15** **Novel Back gate-Field effect transistor (BG-FET) based on curcumin functionalized zinc oxide nanorods for detection of Arsenic(I** **D1 06.4**
Avik Sett, Shatavisha Biswas, Tarun Kanti Bhattacharyya
Department of Electronics and Electrical Communication Engineering, IIT Kharagpur, Kharagpur, India, Department of Electronics and Electrical Communication Engineering, IIT Kharagpur, Kharagpur, India, Department of Electronics and Electrical Communication Engineering, IIT Kharagpur, Kharagpur, India

**11:30** **Discussion**

## 2D Materials and Devices : Sreetosh Goswami, Yogendra Kumar Mishra, Dawid Janas

**13:00** INV **Charge transport mechanisms in inkjet-printed thin-film transistors based on two-dimensional materials** **D1 05.1**
Erik Piatti, Adrees Arbab, Francesco Galanti, Tian Carey, Luca Anzi, Dahnan Spurling, Ahin Roy, Ainur Zhussupbekova, Kishan A. Patel, Jong M. Kim, Dario Daghero, Roman Sordan, Valeria Nicolosi, Renato S. Gonnelli, Felice Torrisi
Erik Piatti, Francesco Galanti, Dario Daghero, Renato S. Gonnelli, Department of Applied Science and Technology, Politecnico di Torino, I-10129 Torino, Italy. Adrees Arbab, Jong M. Kim, Department of Engineering, University of Cambridge, Cambridge CB3 0FA, UK. Adrees Arbab, Tian Carey, Felice Torrisi, Department of Chemistry, Molecular Sciences Research Hub, Imperial College London, White City Campus, Wood Lane, London, W12 0BZ, UK. Luca Anzi, Kishan A. Patel, Roman Sordan, L-NESS, Department of Physics, Politecnico di Milano, I-22100 Como, Italy Dahnan Spurling, Ahin Roy, Ainur Zhussupbekova, Valeria nicolosi, Trinity College Dublin, Dublin 2, Ireland. Felice Torrisi, Dipartimento di Fisica e Astronomia, Universita' di Catania, 95123, Catania, Italy.

**13:30** **Study of the impact of the use of bow-tie antennas on the response of Graphene-FETs Terahertz detectors** **D1 05.2**
E. Abidi, J. A. Delgado-Notario, V. Clericò, J. Salvador-Sanchez, J. E. Velazquez-Perez, J. Calvo-Gallego, E. Diez, T. Taniguchi, K. Watanabe, W. Knap, T. Otsuji,Y. M. Meziani
USAL-NanoLab University of Salamanca (Spain), CENTERA Laboratories, Institute of High Pressure Physics, Polish Academy of Sciences (Poland), USAL-NanoLab University of Salamanca (Spain), USAL-NanoLab University of Salamanca (Spain), USAL-NanoLab University of Salamanca (Spain), USAL-NanoLab University of Salamanca (Spain), USAL-NanoLab University of Salamanca (Spain), National Institute of Material Sciences (Japan), National Institute of Material Sciences (Japan), CENTERA Laboratories, Institute of High Pressure Physics, Polish Academy of Sciences (Poland), Research Institute of Electrical Communication, Tohoku University (Japan), USAL-NanoLab University of Salamanca (Spain),

**13:45** **Large-Scale Electronic Structure Simulations of Semiconductor Materials, Interfaces and Gate Stacks with LCAO Hybrid DFT** **D1 05.3**
Khomyakov, P. A. (1), Wellendorff, J. (1), Palsgaard, M. (1), Gunst, T. (1), Miyagi, H. (1), Verstichel, B. (1), Arcisauskaite, V. (1), Martinez, U.* (1), Blom, A. (1) & Smidstrup, S. (1).
(1) Synopsys QuantumATK, Fruebjergvej 3, 2100 Copenhagen, Denmark * lead presenter

**14:00** **First-Principles Simulations of Vacancies and Grain Boundaries in MoS2-Au Interfaces for Unconventional Computing Paradigm** **D1 05.4**
Gabriele Boschetto*(1), Stefania Carapezzi(1), Corentin Delacour(1), Madeleine Abernot(1), Thierry Gil(1), Aida Todri-Sanial(1)
(1) LIRMM, University of Montpellier, CNRS, 34095 Montpellier, France *Lead presenter

**14:15** **Lateral Hybrid van der Waals Heterostructures of Layered MoS2: Facile Growth and Self-Powered Wide Range Photodetection** **D1 05.5**
Navaneeth Krishnan K*, Anjusree S, Srikrishna Sagar, Litty Thomas Manamel, Arka Mukherjee and Bikas C. Das
Emerging Nanoelectronic Devices Research Laboratory (eNDR Lab), School of Physics, Indian Institute of Science Education and Research Thiruvananthapuram (IISER TVM), Maruthamala PO, Vithura, Thiruvananthapuram 695551, Kerala, India.

**14:30** **FEMOCS – a multiscale simulation tool for investigating and designing nanoscale metal structures under high electric fields** **D1 05.6**
Veronika Zadin, Andreas Kyritsakis, Flyura Djurabekova, Tauno Tiirats, Mihkel Veske
University of Tartu, Estonia, University of Tartu, Estonia, University of Helsinki, Finland, University of Tartu, Estonia, University of Helsinki, Finland.

**14:45** **Discussion**



## Electronic Materials : Sreetosh Goswami, Yogendra Kumar Mishra, Dawid Janas

**16:00** **Wearable microneedle-based extended gate transistor for real-time detection of sodium in interstitial fluids** **D1 08.1**
Youbin Zheng, Rawan Omar, Rongjun Zhang, Ning Tang, Muhammad Khatib, Qi Xu, Yana Milyutin, Walaa Saliba, Yoav Y Broza, Weiwei Wu, Miaomiao Yuan*, and Hossam Haick*
Department of Chemical Engineering and Russell Berrie Nanotechnology Institute, Technion-Israel Institute of Technology, Haifa 3200003, Israel

**16:15** **Molecular polarizability is a key parameter for electronic transport in hybrid materials** **D1 08.2**
Simon Tricard
LPCNO , INSA, CNRS, Université de Toulouse, France

**16:30** **Quantitative Measurements of Anisotropic Thermal Transport in vdW Materials via Cross-Sectional Scanning Thermal Microscopy** **D1 08.3**
Sergio Gonzalez-Munoz, Khushboo Agarwal, Eli Castanon, Zakhar Kudrynskyi, Zakhar D. Kovalyuk, Jean Spièce, Olga Kazakova, Amalia Patane, Oleg Kolosov
Sergio Gonzalez-Munoz, Lancaster University, Khushboo Agarwal, Lancaster University, Eli Castanon, National Physical Laboratory, Zakhar Kudrynskyi, University of Nottingham, Zakhar D. Kovalyuk, Institute for Problems of Materials Science (NAS of Ukraine), Jean Spièce, Université catholique de Louvain, Olga Kazakova, National Physical Laboratory, Amalia Patane, University of Nottingham, Oleg Kolosov, Lancaster University

**16:45** **Study of Current flow in a single crystal of SmB6 from a minimal tight-binding type model** **D1 08.4**
L. G. Mesa, C. J. Páez
Universidad Industrial de Santander

**17:00** **Optical and photothermal response in 2D Silicene–Stanene Heterostructures** **D1 08.5**
E. Bonaventura (1-2), D. Dhungana (1), S. Macis (3), C. Grazianetti (1), C. Martella (1), E. Bonera (2), S. Lupi (3), A. Molle (1).
1 - CNR-IMM Unit of Agrate Brianza, via C. Olivetti 2, Agrate Brianza, Italy 2 - Department of Material Science, University of Milano-Bicocca, Via Cozzi 53, Milan, Italy 3 - Department of Physics, Sapienza University, Piazzale Aldo Moro 5, 00185 Rome, Italy

**17:15** **Mechanisms of oxide removal from InP surface during annealing in As flux** **D1 08.6**
Dmitriev D.V., Kolosovsky D.A., Toropov A.I. & Zhuravlev K.S.
Rzhanov Institute of Semiconductor Physics, Novosibirsk 630090, Russian Federation

**17:30** **Discussion**

**Wednesday june 1**

## Carbon Nanomaterials : Ayan Chaudhuri, Yogendra Kumar Mishra, Sugato Hajra

**08:00** INV **How to tailor the properties of carbon nanotubes?** D1 09.1
Dawid Janas
Silesian University of Technology, Department of Organic Chemistry, Bioorganic Chemistry and Biotechnology, Krzywoustego 4, 44-100 Gliwice

**08:30** **Carbon fibre-based piezoelectric smart composite for energy harvesting** D1 09.2
Qinrong He, Han Zhang, Joe Briscoe*
School of Engineering and Material Science and Materials Research Institute, Queen Mary University of London, London, E1 4NS

**08:45** **Graphene nanogap electrodes for molecular electronic and spintronic applications** D1 09.3
Rossella Zaffino*, Raphael Pfattner*, Daniel Riba*, Teresa Cardona*, Daniel Herrera*, Arántzantzu González-Campo*, Herre S. J. van der Zant**, Núria-Aliaga Alcalde*¥
*Institut de Ciència de Materials de Barcelona ICMAB-CSIC, Carrer dels Til·lers Campus Universitat Autonoma de Barcelona, Bellaterra, Spain, **Kavli Institute of Nanoscience, Delft University of Technology, Lorentzweg 1, Delft 2628 CJ, The Netherlands, *¥ICREA – Institució Catalana de Recerca i Estudis Avançats, Passeig Lluis Companys 23, 08010 Barcelona, Spain,

**09:00** **Development of a graphene-based sensor for antibiotic determination** D1 09.4
Pepper Yang (1), Martin Holicky (1), Benji Fenech Salerno(1), David M. E. Freeman (1), Anthony E. G. Cass (1), Felice Torrisi (1)
Imperial College London, United Kingdom

**09:15** **Electron-phonon interaction toward engineering carrier mobility of periodic edge structured Graphene nanoribbons** D1 09.5
Teng-Chin Hsu1 , Bi-Xian Wu1 , Rong-Teng Lin1, Chia-Jen Chien1, Chien-Yu Yeh1, Tzu-Hsuan Chang1*
1 Graduate Institute of Electronics Engineering, National Taiwan University, Taiwan , 2 Department of Materials Science and Engineering, National Taiwan University, Taiwan, *email: tchang9@ntu.edu.tw

**09:30** **Peroxidase-like activity of Fe species/ZnO@graphitic carbon composite for colorimetric detection of hydrogen peroxide** D1 09.6
Anteneh Fufa Baye,Hern Kim* Lead presenter : Anteneh Fufa Baye , Email: antenehfufa63@gmail.com Corresponding author*: Hern Kim , Email: hernkim@mju.ac.kr
Environmental Waste Recycle Institute, Department of Energy Science and Technology, Myongji University, Yongin, Gyeonggi-do 17058, Republic of Korea

**09:45** **Discussion**

## Hybrid Materials : Yogendra Kumar Mishra, Sugato Hajra, Jost Adam

**10:00** **Computationally predictive gas sensing from inkjet-printed rGO/binary metal oxide sensor** D1 10.1
Ogbeide, O. (1), Bae, G. (1), Yu, W. (1, 2), Morrin, E. (1), Song, Y. (1), Song, W. (3), Li, Y. (2), Su, B.-L. (2), An, K.-S. (3), Hasan, T. (1)
(1) Cambridge Graphene Centre, University of Cambridge, United Kingdom, (2) State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, China, (3) Thin Film Materials Research Center, Korea Research Institute of Chemical Technology (KRICT), Republic of Korea

**10:15** **Energy Level Modulation of Small Molecules Enhances Thermoelectric Performance of Non-doped Carbon Nanotube-based Hybrids** D1 10.2
Tae-hoon Kim (1), Jong-In Hong*(1)
(1) Department of Chemistry, Seoul National University, Seoul 08826, Republic of Korea

**10:30** **Polymer-based Ternary Electrically Conductive Luminescent Hybrid Materials** D1 10.3
1. A.V. Kukhta, A.G. Paddubskaya, T.A. Kulahava, S.A. Maksimenko 2. T.A. Pavich 3. P.Ciambelli, P. Lamberti
1. Institute for Nuclear Problems, Belarusian State University, Babruiskaya Str. 11, 220006 Minsk, Belarus 2. B.I.Stepanov Institute of Physics, National Academy of Sciences of Belarus, Minsk, Belarus 3. University of Salerno, Fisciano, Italy



**10:45** **Zinc oxide tetrapods and carbon dots based hybrid composite for efficient photocatalytic dyes degradation** D1 10.4
Mariia Stepanova1, Reza Abolhassani2, Jacek Fiutowski2, Horst-Gunter Rubahn2, Anna Orlova1, Yogendra Kumar Mishra2
1 ITMO University, Russia 2 Mads Clausen Institute, University of Southern Denmark, Alsion 2, DK-6400, Sønderborg, Denmark

**11:00** **Feasibility of p-doped molecular crystals as transparent conductive electrodes via virtual screening** D1 10.5
Tahereh Nematiaram Alessandro Troisi
University of Liverpool

**11:15** **Hybrid photo-rechargeable structures rGO/Fe2O3/Si which combine benefits of the photo-thermo-electric effect and super capacitor** D1 10.6
Rada Savkina, Oleksij Smirnov, Tetyana ?ryshtab
V. Lashkaryov Institute of Semiconductors Physics, NAS of Ukraine, Nauky av.41, 03028 Kyiv, Ukraine V. Lashkaryov Institute of Semiconductors Physics, NAS of Ukraine, Nauky av.41, 03028 Kyiv, Ukraine Instituto Politécnico Nacional - ESFM, Department of Physics, 07738 Mexico D.F., Mexico

**11:30** **Discussion**

## Energy Materials : Dawid Janas, Yogendra Kumar Mishra, Reza Abolhassani

**13:00** INV **Interfacial properties in composite nano-systems for energy harvesting** D1 11.1
Alberto Vomiero
1) Division of Materials Science, Department of Engineering Sciences and Mathematics, Luleå University of Technology, SE-971 87 Luleå, Sweden. E - mail alberto.vomiero@ltu.se 2) Department of Molecular Sciences and Nanosystems, Ca' Foscari University of Venice, Via Torino 155, 30172 Venezia Mestre, Italy. E - mail alberto.vomiero@unive.it

**13:30** **Patterning of 3D Nanoparticle-Based Aerogel-Like Networks for Photoelectrochemical Applications** D1 11.2
F. Lübkemann, J. F. Miethe, D. Zámbó, R. Anselmann, P. Rusch, A. Schlosser, T. Kodanek, D. Dorfs, N. C. Bigall
Leibniz Universität Hannover, Institute of Physical Chemistry and Electrochemistry and Cluster of Excellence PhoenixD (Photonics, Optics, and Engineering – Innovation Across Disciplines), Hannover, Germany

**13:45** **Zeolite Imidazole framework (ZIF 67) based triboelectric nanogenerator and robotics applications** D1 11.3
Sugato Hajra* (1), Manisha Sahu (1), Hoe Joon Kim (1)
(1) Daegu Gyeongbuk Institute of Science and Technology, Republic of Korea.

**14:00** **Influence of topography on the spontaneous flow of DNA molecules in nanofluidic channels** D1 11.4
Tim Erichlandwehr, Franziska M. Esmek, Dennis Mors, Irene Fernandez-Cuesta
Institut für Nanostruktur- und Festkörperphysik, Universität Hamburg, Germany: Tim Erichlandwehr, Franziska M. Esmek, Dennis Mors, Irene Fernandez-Cuesta
Deutsches Elektronen-Synchroton (DESY), Hamburg, Germany: Tim Erichlandwehr

**14:15** **Ethylene glycol doped PEDOT:PSS for p-n junction based ZnO piezoelectric nanogenerator** D1 11.5
YUAN ZHANG, QINRONG HE, JOE BRISCOE
School of Engineering and Material Science and Materials Research Institute, Queen Mary University of London, London, E1 4NS

**14:30** **Significant enhancement in dielectric, piezoelectric, and ferroelectric properties of PVDF-TrFE through amine-functionalized graphene oxide** D1 11.6
Hamed Abdolmaleki, Shweta Agarwala
Electrical Engineering Department, Aarhus University

**14:45** **Discussion**

## Energy Technologies : Yogendra Kumar Mishra, Dawid Janas, Vomiero Alberto

**15:00** **Liquid metal nanoparticle-water ink fabricated by emulsification-induced self-assembly of conjugated polymer** D1 11.7
Jiwon Park, Eunji Lee*
School of Materials Science and Engineering, Gwangju Institute of Science and Technology, Gwangju 61005, Republic of Korea

**15:15** **Versatile biogenic electrolyte for highly performing and self-stable light-emitting electrochemical cells** **D1 12.2**

Cavinato, L.M.* (1), Millán, G. (2), Dr. Fresta, E. (1), Dr. Fernández-Cestau, J. (1) Prof. Dr. Lalinde, E. (2), Prof. Dr. Berenguer, J.R. (2), Prof. Dr. Costa, R.D. (1) * lead presenter
(1) Chair of Biogenic Functional Materials - Technical University of Munich, Schulgasse 22, 94315 Straubing, Germany (2) Departamento de Química-Centro de Investigación en Síntesis Química (CISQ) - Universidad de La Rioja, Madre de Dios 53, 26006 Logroño, Spain

**15:30** **A novel heterostructure architecture for photodetection and photo-enhanced electron emission applications** **D1 12.3**

Harikrishnan G.*(1), Arijit Kayal (1), K. Bandopadhyay (2), K. Kolodziejak (2), Dorota A. Pawlak (2,3), Joy Mitra (1)
(1) Indian Institute of Science Education and Research, Thiruvananthapuram, India, (2) ENSEMBLE3 Centre of Excellence, Warsaw, Poland, (3) Łukasiewicz – Institute of Microelectronics and Photonics, Warsaw, Poland

**15:45** **Ionic Liquid Functionalized Gel-polymer electrolytes for lithium battery applications** **D1 12.4**

Debalina Deb
CSIR Research Associate, The Solid State and Structural Chemistry Unit – SSCU, IISc, Bengaluru

**16:00** **Microlenses of AlN for solar cells covering** **D1 12.5**

Redko R.1,2, Milenin G.1, Zayac M.1, Boiko V.1, Lytvyn P.1, Redko S.1
1V. Lashkaryov Institute of Semiconductor Physics of the National Academy of Sciences of Ukraine, 2State University of Telecommunications

**16:15** **THE PHYSICAL ASPECTS OF COMPLEXING PROPERTIES OF 1D-, 2D-COORDINATION POLYMERS BASED ON ARENDIYL-BISPHOSPHINIC ACIDS** **D1 12.6**

O.O. Bondarenko, R.M. Balabai, I.V. Bilynskyi
Kryvyi Rih State Pedagogical University

**16:45** **Evidence for the band edge exciton of CuInS2 Nanocrystals enables record efficient large-area Luminescent Solar Concentrators** **D1 12.7**

Anand, Abhinav * a, L. Zaffalon, Matteo a, Gariano, Graziella b, Camellini, Andrea c, Gandini, Marina b, Brescia, Rosaria d, Capitani, Chiara b, Bruni, Francesco b, Pinchetti, Valerio a, Zavelani-Rossi, Margherita c, Meinardi, Francesco * a, A. Crooker, Scott e, Brovelli, Sergio * a
a: Dipartimento di Scienza dei Materiali Università degli studi di Milano-Bicocca Via Roberto Cozzi 55, IT-20125 Milano, Italy b: Glass to Power SpA Via Fortunato Zeni 8, IT-38068 Rovereto, Italy c: Dipartimento di Energia Politecnico di Milano Via Ponzio 34/3, IT-20133 Milano, Italy d: Istituto Italiano di Tecnologia Via Morego 30, IT-16163 Genova, Italy e: National High Magnetic Field Laboratory Los Alamos National Laboratory Los Alamos, NM 87545, USA

**17:00** **Discussion and Closing**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM D2

## Materials for nanoelectronics and nanophotonics

*Symposium Organizers :*

Andreas SEIFERT, CIC nanoGUNE

Graziella MALANDRINO, Università degli Studi di Catania

Shashank MISHRA, Université Claude Bernard Lyon 1, CNRS

Yogendra MISHRA (Main organizer), University of Southern Denmark

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### From 0D to 3D nanomaterials II : Graziella Malandrino, Yogendra Kumar Mishra

**09:00** INV **Functional 3D Network Structures by Effective Assembly of 1D and 2D Nanomaterials** — D2 2 1.1
F. Schütt1, F. Rasch1, L. Saure1, A. S. Nia2, X. Feng2, R. Adelung1
1 Institute for Materials Science, Kiel University, 24118, Kiel, Germany 2 Department of Chemistry and Food Chemistry, Center for Advancing Electronics Dresden (cfaed), Technische Universität Dresden, 01062 Dresden, Germany

**09:30** **Group IV-V based lamellar thin films: a route toward novel 2D materials** — D2 2 1.2
A.Valdenaire*(1), M. Stoffel (1), X. Devaux (1), E. André (2), C. Carteret (2), A. Bouché (1), M. Vergnat (1), H. Rinnert (1)
(1) Université de Lorraine, CNRS, IJL, F-54000 Nancy, France , (2) Université de Lorraine, CNRS, LCPME, F-54000 Nancy, France

**09:45** **Controlling the Coverage, Morphology, Optical Properties and SERS activity of self-assembled AuNP Monolayers on Si in 2D and 3D** — D2 2 1.3
Bartschmid, T.* (1), Bourret, G.R. (2) * lead presenter
(1) and (2) Department of Chemistry and Physics of Materials, University of Salzburg, Jakob-Haringer Strasse 2A, A-5020 Salzburg, Austria

**10:00** **Measurement of spatial homogeneity in 2D transition metal dichalcogenides – a VAMAS inter-laboratory comparison** — D2 2 1.4
Yameng Cao* (1), Sebastian Wood (1), Fernando A Castro (1).
(1) National Physical Laboratory, United Kingdom * lead presenter

**10:15** **Physical vapour deposition of atomically-thin crystals of the helimagentic material NiBr2** — D2 2 1.5
Ivona Košić*(1), Efrén Navarro-Moratalla(1), Antoni Vicent Monteagudo Julia(2)
(1)Instituto de Ciencia Molecular, Universitat de València, Calle Catedrático José Beltrán Martínez 2, 46980, Paterna, Spain.

**10:30** **Discussion**

**10:45**

### From 0D to 3D nanomaterials II : Fabian Schuett, Anna Lucia Pellegrino, Graziella Malandrino

**11:00** INV **New Luminescent 1D and 2D d10 Coinage Metal Organic Chalcogenolate Coordination Polymers** — D2 2 2.1
Saly Hawila,1 Florian Massuyeau,2 Romain Gautier,2 Gilles Ledoux,3 Adel Mesbah,1 Aude Demessence1
1 Univ Lyon, Université Lyon 1, Institut de Recherches sur la Catalyse et l'Environnement de Lyon, IRCELYON, UMR5256, CNRS, 2 Avenue Albert Einstein, 69626, Villeurbanne Cedex, France 2 Université de Nantes, CNRS, Institut des Matériaux Jean Rouxel, IMN, F-44000 Nantes, France 3 Univ Lyon, Université Claude Bernard Lyon 1, CNRS, Institut Lumière Matière, 69622, Villeurbanne, France

**11:30** **On the origin of slow decay photoluminescence decay in CdS quantum dots obtained using Langmuir-Blodgett technique** — D2 2 2.2
Svit, K.A. and Zhuravlev, K.S.
Rzhanov Institute of Semiconductor Physics, Novosibirsk 630090, Russian Federation

**11:45** **Fabrication of branch-like bridges based on Ge-on-Si(110) and observation of strong resonant light emission** — D2 2 2.3
Takahiro Inoue, Youya Wagatsuma, Leo Ikegaya, Kentarou Sawano
Adv. Res. Lab., Tokyo City Univ.

**12:00** **Fast-Response Single-Nanowire Photodetector Based on ZnO/WS2 Core/Shell Heterostructures** — D2 2 2.4
Edgars Butanovs, Alexei Kuzmin, Sergei Piskunov, Boris Polyakov
Institute of Solid State Physics, University of Latvia, Kengaraga Street 8, LV-1063 Riga, Latvia

**12:15** **Discussion**

**12:45** **Lunch and Plenary**



### Functional nanostructured materials : Graziella Malandrino

**14:00** INV **Surface Modification of TiO2 Thin Films for Functional Applications** — D2 2 3.1
Salih Veziroglu, Franz Faupel, Oral Cenk Aktas
Chair for Multicomponent Materials, Institute of Materials Science, Kiel University (CAU), 24143 Kiel, Germany

**14:30** **Optimization of sensors developed for magnetic and temperature fields and based on the nanoscale heterostructures** — D2 2 3.2
K.K.Abgaryan, A.V. Leonov, D.L.Reviznikov
Federal Research Center «Computer Science and Control» of the Russian Academy of Sciences, Institute for Problems of Microelectronics Technology and High-Purity Materials, Russian Academy of Sciences, Federal Research Center «Computer Science and Control» of the Russian Academy of Sciences

**14:45** **Synthesis and Optical Study of Heterometallic Plasmonic Photocatalysts** — D2 2 3.3
Joshua Piaskowski, Gilles R. Bourret
Department of Chemistry and Physics of Materials, University of Salzburg, Jakob Haringer Strasse 2A, A-5020 Salzburg, Austria, Department of Chemistry and Physics of Materials, University of Salzburg, Jakob Haringer Strasse 2A, A-5020 Salzburg, Austria

**15:00** **Magnetic nanoparticles decorated ZnO tetrapods as advanced photocatalysts** — D2 2 3.4
Matiushkina, A.A.*(1), Abolhassani, R.(2), Fiutowski, J.(3), Rubahn, H.-G.(3), Mishra, Y. K.(2) & Orlova, A.A.(1)
(1) Faculty of Photonics, ITMO University, Russia, (2) Smart Materials, NanoSYD, Mads Clausen Institute, University of Southern Denmark, Denmark, (3) NanoSYD Centre, Mads Clausen Institute, University of Southern Denmark, Denmark, * lead presenter

**15:15** **Multicomponent nanocrystal-based hydrogels and aerogels with distinct optical, electronical and electrochemical properties** — D2 2 3.5
N. C. Bigall
Leibniz Universität Hannover, Institute of Physical Chemistry and Electrochemistry and Cluster of Excellence PhoenixD (Photonics, Optics, and Engineering, Innovation Across Disciplines), Hannover, Germany

**15:30** **Discussion**

**15:30**

### Synthesis of nanostructured materials : Salih Veziroglu

**16:00** **The effect of the concentration of NaOH on the synthesis and applicability of CeO2 nanoparticles** — D2 2 4.1
Tóth, Zs. R. *(1), R?zvan??, L.N. (2), Feraru, A. (1,3), Baia, L. (1,3) & Magyari, K. (1,4).
(1) Nanostructured Materials and Bio-Nano-Interfaces Center, Interdisciplinary Research Institute on Bio-Nano-Sciences, Babe?-Bolyai University, Treboniu Laurian Str. 42, RO-400271 Cluj-Napoca, Romania, (2) Faculty of Chemistry and Chemical Engineering, Babe?-Bolyai University, Arany János Str. 11, RO-400028 Cluj-Napoca, Romania, (3) Faculty of Physics, Babe?-Bolyai University, M. Kog?Iniceanu Str. 1, RO-400084 Cluj-Napoca, Romania, (4) Department of Applied and Environmental Chemistry, Faculty of Science and Informatics, University of Szeged, Rerrich Béla Sqr. 1, HU-6720 Szeged, Hungary, *zsejke.toth@ubbcluj.ro

**16:15** **Assemblies of Polymer-coated Nanocrystals** — D2 2 4.2
Irene Morales, Franziska Lübkemann, Christoph Wesemann, Nadja C. Bigall
Institut für Physikalische Chemie und Elektrochemie, Leibinz Universität Hannover

**16:30** **Luminescence-based wide range pH sensor using the biocompatible material, Fluorapatite** — D2 2 4.3
T K Krishnapriya 1, R Anjana 1, Ayswaria Deepti 2, P S Baby Chakrapani 2,3, A S Asha 2,3* and M K Jayaraj 4
1 Department of Physics, Cochin University of Science and Technology. Kochi 682022, India 2 Department of Biotechnology, Cochin University of Science and Technology. Kochi 682022, India 3 Centre of Excellence in Advanced Materials, Cochin University of Science and Technology. Kochi 682022, India 4 University of Calicut, Malappuram 673635, India

**16:45** **Light emitting tensile strained germanium microstructures fabricated via liquid phase epitaxy** — D2 2 4.4
Cicek Boztug, Buse Unlu, Milad Ghasemi, Selcuk Yerci,
Department of Electrical and Electronics Engineering, TED University, Department of Micro and Nanotechnology, Middle East Technical University, Department of Micro and Nanotechnology, Middle East Technical University, Department of Electrical and Electronics Engineering, Middle East Technical University

**17:00** **Effect of starting materials and fabrication conditions on the properties of Mg-doped ZnO materials** — D2 2 4.5

N. Korsunska1, I. Markevich1, D. Bulana2, K. Kozoriz1, S. Ponomaryov1, Yu. Polishchuk1, D. Khmil1, O. Melnichuk3, L. Melnichuk3, L. Khomenkova1,2
1) V. Lashkaryov Institute of Semiconductor Physics of National Academy of Sciences of Ukraine, 45, Pr. Nauky, Kyiv, 03028, Ukraine, 2) National University ?Kyiv Mohyla Academy?, 2 Skovorody str., 04070 Kyiv, Ukraine, 3) Mykola Gogol State University of Nizhyn, 2 Hrafska Str., Nizhyn 16600, Ukraine.

**17:15** **Discussion**



**Tuesday may 31**

## Functional nanomaterials: theory vs. experiments : Graziella Malandrino

**09:00** INV **The Photonic Materials Cloud - Designing, Comparing, and Testing Photonics Materials Online** — D2 2 5.1

Jost Adam
Computational Materials Group, Centre for Photonics Engineering, Mads Clausen Institute, University of Southern Denmark, Campusvej 55, DK-5230 Odense, Denmark

**09:30** **Electronic structure of CaF2** — D2 2 5.2

Jiaqi Chen, Zhaofu Zhang, Yuzheng Guo, John Robertson
Department of Engineering, University of Cambridge, Cambridge CB3 0FA, UK, College of Engineering, Swansea University, Swansea, SA1 8EN, United Kingdom

**09:45** **ZnSnN2 nanometric layers prepared by magnetron sputterting: theory vs experiment** — D2 2 5.3

Narolschi, Ig.(1), Klyukanov, A.A.(1), Rotaru, C.(1,2), Ghiletchii, Gh.(1), Bercu, E.(1), Vatavu, S.*(1,2)
(1) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (2) CaRISMA Research Center, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova

**10:00** **Strong coupling effect on hot-carrier generation in nanoparticle-molecule assemblies** — D2 2 5.4

Rania Zaier, Maria Bancerek, Katarzyna Kluczyk-Korch, Tomasz J. Antosiewicz
Faculty of Physics, University of Warsaw, Pasteura 5, PL-02-093 Warsaw, Poland

**10:15** **Chiral-plasmonic materials for refractive index sensitivity** — D2 2 5.5

Sergio Gómez-Graña, Isabel Pastoriza-Santos and Jorge Pérez-Juste
CINBIO, Departamento de Química Física, Universidade de Vigo 36310 Vigo (Spain)

**10:30** **Electronic properties of beta-Ga2O3 Nanotube (or Nanowire) Arrays** — D2 2 5.6

Prof. Balabai, R.M. (1), PhD student Naumenko, M.V.*(1).
(1) Kryvyi Rih State Pedagogical University, Ukraine

**10:35** **Discussion**

**10:50**

## Applications: Nanomaterials for sensing : Jost Adam, Yogendra Kumar Mishra, Graziella Malandrino

**11:00** **Room temperature H2S gas sensor using one-step CVD grown MoS2 and 2H - MoS2/1T@ 2H - MoS2 heterostructure** — D2 2 6.1

Swathy B Saseendran , Anamika Ashok , Asha A S.
Nanomaterials for Emerging Solid State Technology (NEST) Research laboratory, Department of Physics, Cochin University of Science and Technology, Kochi 682022, Kerala, India , Nanomaterials for Emerging Solid State Technology (NEST) Research laboratory, Department of Physics, Cochin University of Science and Technology, Kochi 682022, Kerala, India , Nanomaterials for Emerging Solid State Technology (NEST) Research laboratory, Department of Physics, Cochin University of Science and Technology, Kochi 682022, Kerala, India 2.Centre of Excellence in Advanced Materials, Cochin University of Science and Technology, Kochi 682022, Kerala, India.

**11:15** **Fabrication and characterization of combined thick-film nanostructures for sensors application** — D2 2 6.2

Klym Halyna
Lviv Polytechnic National University, Lviv, Ukraine

**11:30** **Effect on radiative emission mechanism of surface modification of ZnO nanorods through Au nanoparticle decoration** — D2 2 6.3

Bruno, L.*(1,2), Strano, V. (1,2), Scuderi, M. (3), Franzò, G.(2), Priolo, F.(1,2) & Mirabella, S.(1,2)
(1) Dipartimento di Fisica e Astronomia “Ettore Majorana”, Università di Catania, via S. Sofia 64, 95123 Catania, Italy, (2) CNR-IMM, via S. Sofia 64, 95123 Catania, Italy, (3) CNR-IMM, VIII Strada 5, 95121 Catania, Italy.

**11:45** **Single-step Hybridization of ZnO Tetrapod-based Highly Porous 3D Network with Metals and Metal Oxides Nanoparticles** — D2 2 6.4

Reza Abolhassani, Horst-Gunter Rubahn, Yogendra Kumar Mishra
Mads Clausen Institute, NanoSYD, University of Southern Denmark Alsion 2, 6400, Sønderborg, Denmark

**12:00** **Study of the H2 detection mechanism in chemoresistive sensors using low-cost WO3 nanorods** — D2 2 6.5

G. Mineo1,2, K. Moulaee 3, G. Neri3, S. Mirabella1,2, E. Bruno1,2
1 Dipartimento di Fisica e Astronomia "Ettore Majorana", Università degli Studi di Catania, via S. Sofia 64, 95123 Catania, Italy, 2 CNR-IMM (Università di Catania), via S. Sofia 64, 95123 Catania, Italy, 3 Dipartimento di Ingegneria, Università degli Studi di Messina, Contrada Di Dio, 98158, Sant'Agata, Messina, Italy,

**12:15** **Discussion**

**12:30** **Lunch and Plenary**

## Synthesis of metal-based nanomaterials : Shashank Mishra

**14:45** INV **Amalgamation Synthesis of Intermetallic Nanocrystals** — D2 2 7.1

Jasper Clarysse, Annina Moser, Olesya Yarema, Vanessa Wood, and Maksym Yarema
Chemistry and Materials Design Group, Institute for Electronics, ETH Zurich, Zurich, Switzerland

**15:15** **Hybrid nanostructured thin films of noble metal/bimetallic nanoparticles with tin monosulfide for enhanced photodetection** — D2 2 7.2

Akshana Parameswaran Sreekala, Sebin Devasia, Bindu Krishnan, David Avellaneda Avellaneda, Sadasivan Shaji
Facultad de Ingeniería Mecánica y Eléctrica, Universidad Autónoma de Nuevo León. San Nicolás de los Garza, Nuevo León, 66455, México, Centro de Innovación, Investigación y desarrollo en Ingeniería y Tecnología (CIIDIT), Universidad Autónoma de Nuevo León., PIIT Monterrey, Apodaca, Nuevo León, 66629, México.

**15:30** **High-Aspect Ratio Au Microflakes via Gap-Assisted Synthesis** — D2 2 7.3

Fatemeh Kiani, Giulia Tagliabue
Laboratory of Nanoscience for Energy Technologies (LNET), STI, École Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland

**15:45** **Kinetics of Dispersion During Annealing in Vacuum of Palladium and Platinum Nanofilms Deposited onto Oxide Materials** — D2 2 7.4

Stetsyuk T.V.
Frantsevich Institute for Problems of Materials Science of NAS of Ukraine

**15:50** **In situ liquid-assisted vapor-solid-solid silicon nanowires growth with bi-element catalysts** — D2 2 7.5

E. Ngo, W. Wang, P. Bulkin, I. Florea, P. Roca i Cabarrocas, J.-L. Maurice
Université Paris-Saclay, CNRS, C2N, 91220, Palaiseau, France, École

**16:05** **Discussion**

**16:20**

## Halide perovskites : Anna Lucia Pellegrino, Graziella Malandrino, Yogendra Kumar Mishra

**16:45** **Stability improvement of red CsPbBrI2 nanocrystals tethering phenylated phosphine ligands** — D2 2 8.1

Kuan-Hsueh Peng, Sheng-Hsiung Yang
Institute of Lighting and Energy Photonics, National Yang Ming Chiao Tung University

**17:00** **Enhanced optical properties of halide perovskites by multicentred bonding mechanism** — D2 2 8.2

Xuewei Zhang, Zhaofu Zhang, Yuzheng Guo, Daping Chu, John Robertson
Department of Engineering, University of Cambridge, Cambridge CB3 0FA, UK, School of Electrical Engineering, Wuhan University, Wuhan, 430072, China



**17:15** **Temperature dependent growth of spray-cast Cs3Bi2I9 films: A Perovskite-inspired material for self-powered photodetectors** — D2 2 8.3

Sebin Devasia, S. Shaji, D. A. Avellaneda, J.A. Aguilar Martinez, B. Krishnan
Facultad de Ingeniería Mecánica y Eléctrica, Universidad Autónoma de Nuevo León. San Nicolás de los Garza, Nuevo León, México, 66455 ,Centro de Innovación, Investigación y Desarrollo en Ingeniería y Tecnología (CIIDIT)-Universidad Autónoma de Nuevo León, Parque de Investigación e Innovación Tecnológica (PIIT), Apodaca, Nuevo León, 66600, México, Centro de Investigación e Innovación en Ingeniería Aeronáutica (CIIIA), Facultad de Ingeniería Mecánica y Eléctrica, Carretera a Salinas Victoria, Apodaca, Nuevo León, 66600, México.

**17:30** **High quality inkjet printed-emissive nanocrystalline perovskite CsPbBr3 layers for CCL and LEDs applications** — D2 2 8.4

G. Vescio,1 J.L. Frieiro,1 A. F. Gualdrón-Reyes,2 S. Hernández,1 A. Cirera,1 I. Mora-Seró,2 B. Garrido1
1) MIND-IN2UB, Department of Electronics and Biomedical Engineering, Universitat de Barcelona, Martí i Franquès 1, 08028 Barcelona (Spain) 2) INAM, Universitat Jaume I (UJI), Avenida de Vicent Sos Baynat s/n, 12071 Castelló de la Plana (Spain)

**17:45** **Discussion**

**Wednesday june 1**

## Luminescent nanomaterials I : Shashank Mishra

**09:00** INV **Upconversion nanoparticles for photocatalysis light harvesting** — D2 2 9.1
Bhagyesh Purohit, Yannick Guyot, David Amans, Marie-France Joubert, Benoit Mahler, Shashank Mishra, Christophe Dujardin, Gilles Ledoux
Univ Lyon, Université Claude Bernard Lyon 1, CNRS, Institut Lumière Matière, F-69622, Lyon, France, Univ Lyon, Université Claude Bernard Lyon 1, CNRS, Institut de Recherches sur l'Environnement et la Catalyse de Lyon, F-69622, Lyon, France

**09:30** **Luminescent Er Doped Y2O3 Nanoparticles for Biological Applications** — D2 2 9.2
Regina M. Chiechio 1,3,4, Maria L. Amoruso2, Federica Pappalardo1, Pascale Even-Hernandez 4, Annalinda Contino2, Giuseppe Maccarrone 2, Riccardo Reitano1, Giorgia Franzo1,3, Valerie Marchi4, Paolo Musumeci1, Maria J. Lo Faro1,3*
1) Dipartimento di Fisica e Astronomia "Ettore Majorana", Università degli Studi di Catania, Via S. Sofia 64, 95123 Catania, Italy. 2) Dipartimento Di Scienze Chimiche, Università Degli Studi Di Catania, Viale Andrea Doria 6, 95125, Catania, Italy. 3) Istituto per la Microelettronica e Microsistemi, Consiglio Nazionale delle Ricerche (CNR-IMM) UoS Catania, Via S. Sofia 64, 95123 Catania, Italy. 4) Institut des Sciences Chimiques de Rennes, CNRS UMR 6226, Université Rennes 1, 35042 Rennes Cedex, France.

**09:45** **Multifunctional identification markers based on Gd2O3:Tm3 , Er3 , Nd3 particles** — D2 2 9.3
Vassily A. Medvedev, Ilya E. Kolesnikov, Pavel K. Olshin, Mikhail D. Mikhailov, Alina A. Manshina, Daria V. Mamonova
Saint Petersburg State University, Saint Petersburg, 199034, Russia, École Polytechnique Fédérale de Lausanne, Lausanne, 1015, Switzerland, Peter the Great St.Petersburg Polytechnic University, Saint Petersburg, 194064, Russia

**10:00** **BaF2:Eu thin films for photovoltaic applications: fabrication through a simple MOCVD approach and conversion properties** — D2 2 9.4
Francesca Lo Presti,1 Anna Lucia Pellegrino,1 Adolfo Speghini,2 and Graziella Malandrino.1
1.Dipartimento di Scienze Chimiche, Università di Catania and INSTM UdR Catania V.le A. Doria 6, 95125 Catania Italy. E-mail: gmalandrino@unict.it, 2. Nanomaterials Research Group, Dipartimento di Biotecnologie, Università di Verona and INSTM UdR Verona, Strada le Grazie 15, 37134 Verona, Italy.

**10:15** **Luminescence of Europium doped 2D-MoO3 nanocrystals** — D2 2 9.5
E. Nieto-Pinero, A. Caño, F. Chacon, R. Serna
Laser Processing Group, Instituto de Optica, IO, CSIC, Serrano 121, 28006 Madrid, Spain

**10:30** **Discussion**

**10:45**

## Luminescent nanomaterials II : Gilles Ledoux

**11:00** **Luminescence of BaxMg(2-x)F4 ceramics synthesized in a radiation field** — D2 2 10.1
Zhunusbekov A. 1, Strelkova A. 1, Lisitsyna2 L.A.
1. The L. N. Gumilyov Eurasian National University sunaman@mail.ru, a.strelkova@nurorda.kz 2. Tomsk State University of Architecture and Building. Tomsk, Russia lisitsyna@mail.ru

**11:15** **Identification of visible photoluminescence emissions from a single excited state of self-assembled quantum dots** — D2 2 10.2
Rihani Jawher-a, Meherzi Oueslati-b*, Hosni Ajlani-b, and Radhwen Chtourou-a
a-Laboratoire de Photovoltaïque de Semiconducteurs et de Nanostructures, Centre de Recherche des Sciences et Technologie de l'Energie, BP. 95, Hammam-Lif 2050, Tunisia. b-Laboratoire de Nanomatériaux, Nanotechnologie et Energie (L2NE), Faculté des Sciences de Tunis, Université de Tunis El Manar, 2092 Tunis, Tunisia.



**11:30** **Study of microstructure, optical behaviors of Rare earth doped Ba0.85Ca0.12RE0.03Ti0.90Zr0.04Nb0.042O3 ceramics (RE = Ce3+ and** — D2 2 10.3
1/ Zeineb Raddaoui 2/ Marwa Bourguiba 3/ Pascal Marchet 4/ Jemai Dhahri 5/ Moez Chafra
1/ - Laboratory of Condensed Matter and Nanosciences, Faculty of Sciences of Monastir, University of Monastir, Avenue of the environment , 5019 Monastir, Tunisia. - Institute for Research on Ceramics, University of Limoges, UMR 7315, 87068 Limoges, France. 2/ - Laboratory of Applied Mechanics and systems, School Polytechnic of Tunisia, University of Carthage, La Marsa, Tunisia. - Faculty of Sciences Tunis, University of Tunis el Manar, Tunis 2092. 3/ Institute for Research on Ceramics, University of Limoges, UMR 7315, 87068 Limoges, France. 4/ Laboratory of Condensed Matter and Nanosciences, Faculty of Sciences of Monastir, University of Monastir, Avenue of the environment , 5019 Monastir, Tunisia. 5/ Laboratory of Applied Mechanics and systems, School Polytechnic of Tunisia, University of Carthage, La Marsa, Tunisia.

**11:45** **Ratiometric luminescent thermometry in Nd3+/Yb3+ codoped oxide materials for in vivo applications** — D2 2 10.4
Itália V. BARBOSA1,2, Géraldine DANTELLE1, Alain IBANEZ1, Lauro J. Q. MAIA2
1 Université Grenoble Alpes - Institut Néel, CNRS, Grenoble, France, 2 Universidade Federal de Goiás – Instituto de Física, Goiânia, Goiás, Brazil

**12:00** **Strong Er3+ radiative emission enhancement by quasi-BIC modes coupling in all-dielectric slot nanoantenna arrays** — D2 2 10.5
Kalinic, B.(1), Cesca, T.(1), Balasa, I. G.(1), Jacassi, A.(2), Sapienza, R.(2), Mattei, G. (1)
(1) Department of Physics and Astronomy, University of Padova, Padova, Italy, (2) The Blackett Laboratory, Department of Physics, Imperial College, London, United Kingdom

**12:15** **Correlative study between nanoscale structure and optical properties of highly Erbium-doped silicon oxide thin films** — D2 2 10.6
E. Talbot1, S.Guehairia1, C. Castro1, P. Pareige1, F. Gourbilleau2, J. Cardin2, C. Labbé2, M. Carrada3
1- Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen, France 2- CIMAP, Normandie Univ, ENSICAEN, UNICAEN, CEA, CNRS, CIMAP, 14000, Caen, France 3- CEMES-CNRS, Université de Toulouse, 29 rue Jeanne Marvig, 31055 Toulouse, France

**12:30** **Discussion**

**12:45** **Lunch and Plenary**

## Applications: sensing and luminescence : Graziella Malandrino

**15:00** **Low temperature detection of nitric oxide by CuO nanoparticles synthesized by pulsed laser ablation** — D2 2 11.1
Censabella M. (1,2), Iacono V. (1,2,3), Scandurra A. (1,2), Moulaee K. (4), Neri G. (4), Ruffino F. (1,2,3), Mirabella S. (1,2,3)
(1) Dipartimento di Fisica e Astronomia "Ettore Majorana", Università di Catania, via S. Sofia 64, 95123 Catania, Italy (2) CNR-IMM (Catania Università), via S. Sofia 64, 95123 Catania, Italy (3) CSFNSM - Centro Siciliano di Fisica Nucleare e Struttura della Materia, Via S. Sofia 64 95123 Catania (4) Department of Engineering, University of Messina and INSTM Research Unity, C.da Di Dio, I-98166, Messina, Italy

**15:15** **Tunning the Gas Sensing Properties of rGO with In2O3 Nanoparticles** — D2 2 11.2
Bruno S. de Lima (1, 2), Amanda A. Komorizono (1), Amadou L. Ndiaye (2), Maria Inês B. Bernardi (1), Jérôme Brunet (2), and Valmor R. Mastelaro (1)
1 Sao Carlos Institute of Physics, University of Sao Paulo, Sao Carlos 565-905, SP, Brazil, 2 Clermont Auvergne INP, CNRS, Institut Pascal, Université Clermont Auvergne, F-63000 Clermont-Ferrand, France, F-63000 Clermont-Ferrand, France,

**15:30** **Aluminium borate powders and composite coatings as rare earth-free phosphors** — D2 2 11.3
Cathalan, J.*(1)(2), Salaün, M.(2), Ibanez, A.(2), Potdevin, A.(1), Chadeyron, G.(1), Gautier-Luneau, I.(2).
(1) Université Clermont Auvergne, Clermont Auvergne INP, CNRS, Institut de Chimie de Clermont-Ferrand, F-63000 Clermont-Ferrand, France (2) Université Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, F-38000 Grenoble, France

**15:45** **Study of post-deposition anneal for optimized ALD Al2O3/etched GaN interfacial properties** D2 2 11.4

P. Fernandes Paes Pinto Rocha* (1)(2), L. Vauche (1), E. Martinez (1), W. Vandendaele (1), N. Rochat (1), T. Spelta (1), S. Boubenia (2), B. Salem (2), V. Sousa (1)
(1) CEA, LETI, MINATEC Campus, F-38054 Grenoble, France and Univ. Grenoble Alpes, F-38000 Grenoble, France (2) Univ. Grenoble Alpes, CNRS, CEA/ LETI Minatec, Grenoble INP, LTM, F-38054 Grenoble, France

**16:00** **Discussion**



**Thursday june 2**

## Dielectric, piezo- and ferroelectric nanomaterials I : Graziella Malandrino

**09:00** INV **Optical transistor and optical memory realization with photoferroelectrics** D2 2 12.1

A. Makhort(1), R. Gumeniuk(2), J.-F. Dayen(1), P. Dunne(1), U. Burkhardt(3), M. Viret(4), B. Doudin(1), B. Kundys(1)*
1. Université de Strasbourg, CNRS, Institut de Physique et Chimie des Matériaux de Strasbourg,UMR 7504, 23 rue du Loess, Strasbourg F-67000, France. 2. Institut für Experimentelle Physik, TU Bergakademie, Leipziger Str. 23, Freiberg 09596, Germany. 3. Max Planck Institut für Chemische Physik fester Stoffe Nöthnitzer Str. 40, 01187 Dresden, Germany. 4. SPEC, CEA, CNRS, Université Paris-Saclay, Gif-sur-Yvette 91191, France.

**09:30** **Nanoscale studies of electronic and photoinduced effects in ferroelectric thin films heterostructures** D2 2 12.2

Xavier Henning, Laurianne Wendling, Mircea Rastei, Aziz Dinia, Silviu Colis
Institut de Physique et Chimie des Matériaux de Strasbourg CNRS Université de Strasbourg 23 rue du Loess F-67034 Strasbourg France

**09:45** **Nanoscale measurements of High Dielectric Constants for piezoelectric materials by Scanning Microwave Microscopy** D2 2 12.3

K. Kaja*(1), D. Richert (1), J. Morán (1), A. Delvallée (1), D. Allal (1), B. Gautier (2) (3) & F. Piquemal (1).
(1) Laboratoire national de métrologie et d'essais, France (2) Institut des Nanotechnologies de Lyon, France (3) Institut National des Sciences Appliquées de Lyon, France

**10:00** **Piezoelectric nanostructured α-Quartz films on Silicon: from material to new devices** D2 2 12.4

Claire Jolly* (1), David Sánchez-Fuentes (1), Dilek Cakiroglu (1). A. Gomez (1), Raissar Rathar (1,2), Laura Picas (2), A.Carretero-Genevrier. (1) * lead presenter
(1) Institut d'Electronique et des Systemes (IES), CNRS, Université de Montpellier, 860 Rue de Saint Priest 34095 Montpellier, France (2) Institut de Recherche en Infectiologie de Montpellier (IRIM), CNRS UMR 9004–Université de Montpellier, 34293 Montpellier, France

**10:15** **Giant Piezoelectric Response in Non-stoichiometric Epitaxial BaTiO3** D2 2 12.5

Subhajit Pal,*Sandeep Vura*, ?Debadarshini Samantaray, Amulya Dwivedi, Rama Satya Sandilya, Vishnu Kumar, Vijayendra Shastri, Saurabh Chandorkar, Srinivasan Raghavan, and Pavan Nukala*
Centre for Nanoscience and Engineering, Indian Institute of Science, Bangalore 560012, India

**10:30** **Discussion**

**10:45**

## Dielectric, piezo- and ferroelectric nanomaterials II : Bohdan Kundys

**11:00** **Inverse design from synthetic conditions and precursors for dielectric properties of BaTiO3 assisted by machine-learning** D2 2 13.1

Min-Jeong Gong(1)*, Dong-Hwa Seo(1), Young Seog Yoon(2), Hyun-woo Oh(2), Suyoung Chi(2), Seong Hyeok Choi(3), Hyeon Jin Jung(3), Moonhee Choi(3), Sung Beom Cho(3)
(1) School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology, South Korea (2) ICT-enabled Intelligent Manufacturing Research Section, Electronics and Telecommunications Research Institute, South Korea (3) Korea Institute of Ceramic Engineering & Technology, South Korea * lead presenter

**11:15** **Excellent excitonic properties and non-zero valley splitting in 2D antiferromagnetic MPX3 crystals** D2 2 13.2

Milosz Rybak, Paulo E. Faria Junior, Tomasz Wozniak, PaweÅ‚ Scharoch, Jaroslav Fabian, Jens Kunstmann and Magdalena Birowska
Department of Semiconductor Materials Engineering, Faculty of Fundamental Problems of Technology Wroclaw University of Science and Technology WybrzeÅ¼e WyspiaÅ„skiego 27, 50-370 Wroclaw, Poland

**11:30** **The Effects of Characteristics of Raw Materials and Synthetic Conditions on Properties of BaTiO3: A Structural Equation Model** D2 2 13.3

Young Seog Yoon(1)*, Suyoung Chi(1), Hyun-woo Oh(1), Min-Jeong Gong(2), Dong-Hwa Seo(2), Hyeon Jin Jung(3)
(1) ICT-enabled Intelligent Manufacturing Research Section, Electronics and Telecommunications Research Institute, South Korea (2) School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology, South Korea (3) Korea Institute of Ceramic Engineering & Technology, South Korea * lead presenter

**11:45** **MOVPE growth of cubic GaN on GaAs (110) substrate** D2 2 13.4

I. Daldoul a*, S. Othmani a, A. Mballo b, P. Vuong b, J.P. Salvestrini b,c, N. Chaaben a
a Laboratoire de Recherche sur les Hétéro-Epitaxies et Applications, Faculté des Sciences de Monastir, 5019, Université de Monastir, Tunisia b International Research Lab Georgia Tech – CNRS (IRL 2958), Georgia Tech Lorraine, 2 rue Marconi, 57070, Metz, France c School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, 30332, USA Corresponding author. E-mail address: imendaldoul9@gmail.com (I.Daldoul).

**12:00** **Study of manganese incorporation in Zn2TiO4 produced by solid-state reaction method** D2 2 13.5

L. Borkovska1, T. Stara1, I. Vorona1, V. Nosenko1, O.Gudymenko1, V. Kladko1, K. Kozoriz1, C. Labbé2, J. Cardin2, J.-L. Doualan2 and T. Kryshtab3
1V. Lashkaryov Institute of Semiconductor Physics of the NAS of Ukraine, 45 Prospect Nauky, 03028 Kyiv, Ukraine, 2CIMAP, CEA-CNRS-ENSICAEN, Normandie Université, 6 Blvd Maréchal Juin, Caen, France, 3Instituto Politécnico Nacional ? ESFM, Av. IPN, Ed.9 U.P.A.L.M., 07738 Mexico D.F., Mexico

**12:15** **Discussion**

**12:30** **Lunch and Plenary**

## Nanostructured films : Yogendra Kumar Mishra, Graziella Malandrino

**15:00** **Comparative study of WSe2 thin films synthesized via pre-deposited WO3 and W precursor material selenization** D2 2 14.1

Kevon Kadiwala, Edgars Butanovs, Andrejs Ogurcovs, Martins Zubkins, Boris Polyakov
Institute of Solid State Physics, University of Latvia, Kengaraga street 8, Riga, Latvia, LV-1063

**15:15** **Facile synthesis of ultra-thin nanocomposite films** D2 2 14.2

G. Cristian Vásquez, Sascha Ehlert, Martin Dulle, Margarita Kruteva, Stephan Hauschild, Beate Förster, Stephan Förster
Jülich Centre for Neutron Science (JCNS-1), Forschungszentrum Jülich

**15:30** **Cobalt metal via ALD using new zinc alkyls as reduction inducing agents: A promising approach for metal ALD** D2 2 14.3

David Zanders, Seán T. Barry, Anjana Devi
Inorganic Materials Chemistry, Ruhr University Bochum, Universitätsstraße 150, Bochum, Germany 44780, Department of Chemistry, Carleton University, 1125 Colonel By Drive, Ottawa, Ontario K1S 5B6, Canada Department of Chemistry, Inorganic Materials Chemistry, Ruhr University Bochum, Universitätsstraße 150, Bochum, Germany 44780

**15:45** **Tunable Photoluminescence Enhancement with Plasmonic Nanoparticles on Thin Film Vanadium Dioxide** D2 2 14.4

Stephen Cunningham, Calin Hrelescu, Gwenael Atcheson, Plamen Stamenov, A. Louise Bradley
School of Physics and AMBER, Trinity College Dublin

**16:15** **Optimization of sensors developed for magnetic and temperature fields and based on the nanoscale heterostructures** D2 2 14.6

K.K.Abgaryan, A.V. Leonov, D.L.Reviznikov
Federal Research Center “Computer Science and Control” of the Russian Academy of Sciences, Institute for Problems of Microelectronics Technology and High-Purity Materials, Russian Academy of Sciences, Federal Research Center “Computer Science and Control” of the Russian Academy of Sciences

**16:30** **Discussion and Closing**

E-MRS European Materials Research Society

Spring Meeting 2022

May 30 | June 3
Virtual Conference

# SYMPOSIUM E

## Adaptive materials and devices for brain-inspired electronics

*Symposium Organizers :*


Adnan MEHONIC, University College London

Erika COVI, NaMLab gGmbH

Giuliana DI MARTINO, University of Cambridge

Ignasi FINA, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC)

Veeresh DESHPANDE, Helmholtz-Zentrum Berlin fur Materialien und Energie


Selected contributions will be published in a focused issue
of Neuromorphic Computing and Engineering (IoP).

APL Materials

NEUROMORPHIC Computing and Engineering

ACS APPLIED ELECTRONIC MATERIALS

IOP Publishing

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## Monday may 30

**09:00** **Welcome and Introduction to the Symposium**

### Oxide-based Devices 1 : Adnan Mehonic

**09:15** INV **Metal-oxide memristors for sesnsory applications** E 1.1
Themis Prodromakis
Centre for Electronics Frontiers, University of Southampton, UK

**09:45** **In materia reservoir computing with self-organizing nanowire networks** E 1.2
Gianluca Milano1, Giacomo Pedretti2, Kevin Montano3, Saverio Ricci2, Shahin Hashemkhani2, Luca Boarino1, Daniele Ielmini2, Carlo Ricciardi3
1Advanced Materials Metrology and Life Science Division, INRiM (Istituto Nazionale di Ricerca Metrologica), Strada delle Cacce 91, 10135 Torino, Italy. 2Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano and IU.NET, Piazza L. da Vinci 32, 20133, Milano, Italy. 3Department of Applied Science and Technology, Politecnico di Torino, C.so Duca degli Abruzzi 24, 10129 Torino, Italy.

**10:00** **Multimodal transistors with constant transconductance as analog ReLU activation functions** E 1.3
Bestelink, E.*(1), Surekcigil Pesch, I.(1), Fustec, J.-C.(2), de Sagazan, O.(2), Mehonic, A.(3) & Sporea, R.A.(1).
(1) Advanced Technology Institute, University of Surrey, Guildford, United Kingdom (2) University of Rennes1, IETR-UMR6164, Rennes, Brittany, France (3) Department of Electronic and Electrical Engineering, University College London, London, United Kingdom * lead presenter

**10:15** **Discussion**

**10:30** **Coffee**

### Organic and Halides 1 : Veeresh Deshpande

**10:45** **Analysis of the distribution and retention of the quantum conductance states in Cu/SiO2/W devices** E 2.1
Florian Maudet (1), Onur Toprak(1), Veeresh Deshpande(1), Catherine Dubourdieu (1,2)
1.Institute Functional Oxides for Energy-Efficient Information Technology (EM-IFOX), Helmholtz-Zentrum Berlin für Materialien und Energie, Hahn-Meitner-Platz 1, 14109 Berlin, Germany 2.Freie Universitat Berlin, Physical Chemistry, Arnimallee 22, 14195 Berlin Germany

**11:00** **Active crossbar using amorphous oxide semiconductor technology towards artificial neural networks hardware** E 2.2
Maria Elias Pereira, Jonas Deuermeier, Pedro Barquinha, Rodrigo Martins, Elvira Fortunato and Asal Kiazadeh
i3N/CENIMAT, Department of Materials Science, NOVA School of Science and Technology and CEMOP/UNINOVA, NOVA University Lisbon, Campus de Caparica, 2829-516 Caparica, Portugal

**11:15** **1/f noise spectroscopy and noise tailoring of resistive switching devices** E 2.3
A. Halbritter, B. Sánta, L. Pósa, T.N. Török, D. Molnár, Z. Balogh A. Halbritter, B. Sánta, L. Pósa, T.N. Török, D. Molnár, Z. Balogh: Department of Physics, Institute of Physics, Budapest University of Technology and Economics, Műegyetem rkp. 3., H-1111 Budapest, Hungary. A. Halbritter, B. Sánta, D. Molnár, Z. Balogh MTA-BME Condensed Matter Research Group, Műegyetem rkp. 3., H-1111 Budapest, Hungary L. Pósa: Institute of Technical Physics and Materials Science, Centre for Energy Research, Konkoly-Thege M. út 29-33, 1121 Budapest, Hungary

**11:30** **Dendritic Computation: A case for its replication and a framework to work within. D. J. Mannion, A. Mehonic, A. J. Kenyon** E 2.4
University College London (UCL)

**11:45** **Direct Comparison of the SET Kinetics of Memristive Cells in Filamentary and Area-Mode** E 2.5
Stephan Aussen, Felix Cüppers, Rainer Waser, Susanne Hoffmann-Eifert
Peter Grünberg Institute (PGI 7), Forschungszentrum Jülich GmbH and JARA-FIT, Jülich, Germany, Peter Grünberg Institute (PGI 7), Forschungszentrum Jülich GmbH and JARA-FIT, Jülich, Germany, Peter Grünberg Institute (PGI 7), Forschungszentrum Jülich GmbH and JARA-FIT, Jülich, Germany and Institute of Electronic Martials (IWE II) and JARA-Fit, RWTH Aachen University, Aachen, Germany, Peter Grünberg Institute (PGI 10), Forschungszentrum Jülich GmbH and JARA-FIT, Jülich, Germany

**12:00** **Discussion**

**12:15** **Lunch**



### Organic and Halides 2 : Rohit John

**13:45** INV **Organic neuromorphic electronics and biohybrid systems** E 3.1
Yoeri van de Burgt
Eindhoven University of Technology

**14:15** **Reconfigurable Memristors for Neuromorphic Computing** E 3.2
Rohit Abraham John (1,2) , Yiğit Demirağ (3), Giacomo Indiveri (3), Maksym V. Kovalenko (1,2)
1 Department of Chemistry and Applied Biosciences, Institute of Inorganic Chemistry, ETH Zürich, CH-8093 Zürich, Switzerland 2 Empa-Swiss Federal Laboratories for Materials Science and Technology, CH-8600 Dübendorf, Switzerland. 3 Institute of Neuroinformatics, University of Zurich and ETH Zurich, Zurich, 8057, Switzerland.

**14:30** **Superionic Conductors and Its Application in Low Voltage Synaptic Transistors** E 3.3
Arka Mukherjee, Bikas C Das
School of Physics, Indian Institute of Science Education and Research Thiruvananthapuram (IISER TVM), Vithura, Trivandrum, Kerala 695551, India.

**14:45** **Discussion**

**15:00** **Coffee**

### Organic and Halides 3 : Rohit John

**15:15** **Nanostrcutured Perovskite based Resistive RAM for Future Storage and Computing** E 4.1
Swapnadeep Poddar, Yuting Zhang, Zhiyong Fan*
The Hong Kong University of Science and Technology

**15:30** **Stability of quantized-conductance plateaus in memristors: toward understanding the mechanisms of resistive switching** E 4.2
Kharlanov, O.G.*(1), Shvetsov, B.S.(2), Rylkov, V.V.(2) & Minnekhanov, A.A.(2)
(1) Faculty of Physics, Lomonosov Moscow State University, Russia (2) National Research Center “Kurchatov Institute”, Russia

**15:45** **Frequency domain response of memristors, synapses and neurons** E 4.3
Juan Bisquert
Institute of Advanced Materials, Universitat Jaume I, 12006 Castelló, Spain.

**16:00** **Halide perovskite memristors as flexible and reconfigurable physical unclonable functions** E 4.4
Rohit Abraham John (1), Nimesh Shah (2), Sujaya Kumar Vishwanath (1), Si En Ng (1), Benny Febriansyah (3), Metikoti Jagadeeswararao (3), Chip-Hong Chang (2), Arindam Basu (2), Nripan Mathews (1, 3)
1 School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore 2 School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore, Singapore 3 Energy Research Institute @ NTU (ERI@N), Nanyang Technological University, Singapore, Singapore

**16:15** **Discussion**

**16:30** **Coffee**

### Neuromorphic Systems 1 : Rohit John

**16:45** **Numerical exploration of spiking neuron circuits in organic pOTFT technology** E 5.1
Zonglong Li□, Paoline Coulson□, Benjamín Iñíguez□, Krunoslav Romanjek□, Laurie E. Calvet□ □ Center for Nanoscience an Nanotechnology, CNRS-Université Paris-Saclay, Palaiseau, France, □ Department of Electronic, Electrical and Automatic Control Engineering, University Rovirai Virgili, Tarragona, Spain, □ CEA-LITEN, 38000 Grenoble, France,

**17:00** **Memristive synapse coupling biological neuronal populations in real-time** E 5.3
C. Dias 1, D. Castro 2, M. Aroso 2, J. Ventura 1 and P. Aguiar 2
1 IFIMUP, Departamento de Física e Astronomia, Faculdade de Ciências, Universidade do Porto, Rua do Campo Alegre s/n, 4169-007 Porto, Portugal 2 Neuroengineering and Computational Neuroscience Lab, Instituto Nacional de Engenharia Biomédica (INEB), Instituto de Investigação e Inovação em Saúde (i3S), Universidade do Porto, Rua Alfredo Allen, 208, 4200-135 Porto, Portugal

**17:15** **Discussion**

**Tuesday may 31**

## Oxide-based Devices 2 : Giuliana di Martino

**09:00** INV **Prospects and challenges of area-dependent memristive devices for neuromorphic computing** — E 6.1
Regina Dittmann
Peter-Grünberg-Institute (PGI-7), Research Center Jülich and JARA-FIT, 52428 Jülich, Germany

**09:30** **Hafnium-oxide-based Thin Films for Neuromorphic Resistive Switching** — E 6.2
Markus Hellenbrand, Hongyi Dou, Ming Xiao, Aiping Chen, Haiyan Wang, Quanxi Jia, Judith Driscoll
Department of Materials Science and Metallurgy, University of Cambridge, UK, School of Materials Engineering, Purdue University, USA, Los Alamos National Laboratory, USA, Department of Materials Design and Innovation, University at Buffalo, USA

**09:45** **Ionic conductor materials for high-performance resistive switching memory devices Ming Xiao, Markus Hellenbrand, Zhuotong Sun, Judith L. MacManus-Driscoll** — E 6.3
Department of Materials Science & Metallurgy, University of Cambridge, CB3 0FS, United Kingdom

**10:00** **Origin of switchable polarization inside binary oxides** — E 6.4
Atif Jan(a), Giuliana Di Martino(a)
(a) Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK

**10:15** **Discussion**

**10:30** **Coffee**

## Design for Energy-efficient Systems : Stefano Brivio

**10:45** INV **In-memory computing based on phase-change memory** — E 7.1
Abu Sebastian
IBM Research - Zurich

**11:15** **Filamentary-based TaOx/HfO2 memristive synapses** — E 7.2
T. Stecconi, Y. Popoff, D. Falcone, R. Guido, A. La Porta, F. Horst, B. J. Offrein and V. Bragaglia
IBM Research GmbH-Zurich Research Laboratory, CH-8803 Rüschlikon, Switzerland

**11:30** **Exploring a memristor-based Chua circuit design including non-volatile tunable properties** — E 7.3
M. Escudero *(1), L. Pancioni(2), M. Forti(2), A. Tesi(3), F. Corinto(4), S. Spiga(1) and S. Brivio(1) (1) CNR-IMM, Unit of Agrate Brianza, Agrate Brianza, 20864, Italy (2) Università degli Studi di Siena, Siena, 53100, Italy (3) Università degli Studi di Firenze, Florence, 50121, Italy (4) Politecnico di Torino, Turin, 10129, Italy

**11:45** **Formingless resistive switching memory crosspoint arrays for in-memory machine learning** — E 7.4
Saverio Ricci, Piergiulio Mannocci, Matteo Farronato, Shahin Hashemkhani, Daniele Ielmini
Politecnico di Milano, Politecnico di Milano, Politecnico di Milano, Politecnico di Milano, Politecnico di Milano,

**12:00** **Discussion**

**12:15** **Lunch**

**13:45** **Plenary Talk**

**15:00** **Coffee**

## Optical Methods and Systems : Ignasi Fina

**15:15** **Real-time in-situ optical tracking of oxygen vacancy migration in memristors** — E 8.1
Giuliana Di Martino(a), Angela Demetriadou(b), Weiwei Li(a), Dean Kos(c), Bonan Zhu(a), Xuejing Wang(d), Bart de Nijs(c), Haiyan Wang(d), Judith MacManus-Driscoll(a), Jeremy J. Baumberg(c)
(a) Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK, (b) School of Physics and Astronomy, University of Birmingham, Birmingham, UK, (c) NanoPhotonics Centre, Cavendish Laboratory, University of Cambridge, Cambridge, UK, (d) School of Materials Engineering, Purdue University, West Lafayette, IN, USA



**15:30** **Towards non-volatile memristors based on ferroelectric polarization optical switching Huan Tan, Florencio Sánchez, Ignasi Fina** — E 8.2
Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra, Catalonia 08193, Spain

**15:45** **Optoelectronic synaptic plasticity emulated in a ZnO-based artificial synapse for neuromorphic image sensing application** — E 8.3
Subin P S, Midhun P S, Aldrin Antony, K J Saji, M K Jayaraj
Subin P S - Centre of Excellence in Advanced Materials, Cochin University of Science and Technology, Kochi - 682 022, Kerala, India., Midhun P S - Department of Physics, Cochin University of Science and Technology, Kochi - 682 022, Kerala, India., Aldrin Antony - Centre of Excellence in Advanced Materials, Cochin University of Science and Technology, Kochi - 682 022, Kerala, India. Department of Physics, Cochin University of Science and Technology, Kochi - 682 022, Kerala, India., K J Saji - International School of Photonics, Cochin University of Science and Technology, Kochi - 682 022, Kerala, India. Centre of Excellence in Advanced Materials, Cochin University of Science and Technology, Kochi - 682 022, Kerala, India. Inter University Centre for Nanomaterials and Devices, Cochin University of Science and Technology, Kochi - 682 022, Kerala, India., M K Jayaraj - University of Calicut, Thenjipalam – 673 635, Kerala, India.

**16:00** **Multi-mem response of topotactic redox La_1/2Sr_1/2Mn_1/2Co_1/2O_3&#8722,x perovskite** — E 8.4
W. Román Acevedo (1), M. H. Aguirre (2), C. Ferreyra (1), M.J. Sánchez (1,3), M. Rengifo (1), C. A. M. van den Bosch (4), A. Aguadero (4), B. Noheda (5), D. Rubi (1) (1) Instituto de Nanociencia y Nanotecnología (INN), CONICET-CNEA, Argentina, (2) Instituto de Nanociencia y Materiales de Aragón (INMA-CSIC) and Dpto. de Física de la Materia Condensada and Laboratorio de Microscopías Avanzadas, Universidad de Zaragoza, Spain, (3) Centro Atómico Bariloche and Instituto Balseiro (UNCu), Bariloche, Argentina, (4) Department of Materials, Imperial College London, United Kingdom, (5) Groningen Cognitive Systems and Materials Center (CogniGron) and Zernike Institute for Advanced Materials, University of Groningen (RuG), The Netherlands

**16:15** **Discussion**

**Wednesday june 1**

## Nanowires and 2D Materials Systems : Giuliana di Martino

**09:00** INV **Neuromorphic properties of nanowire networks** E 10.1
Ruomin Zhu, Alon Loeffler, Sam Lilak, Christopher Dunham, Joel Hochstetter, Adam Stieg, James Gimzewski, Zdenka Kuncic
University of Sydney, University of Sydney, University of California at Los Angeles, University of California at Los Angeles, University of Cambridge, California NanoSystems Institute and University of California at Los Angeles, University of California at Los Angeles, University of Sydney

**09:30** **Volatile Memtransistor based on MoS2 for memory and neuromorphic computing** E 10.2
Matteo Farronato, Margherita Melegari, Saverio Ricci, Shahin Hashemkhani, Alessandro Bricalli, Daniele Ielmini
Matteo Farronato, Margerita Melegari, Saverio Ricci, Shahin Hashemkhani, Daniele Ielmini Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB), Politecnico di Milano and IUNET, piazza L. da Vinci 32, 20133, Milano, Italy Alessandro Bricalli Weebit Nano, Hod Hasharon, Israel

**09:45** **Fabrication and Characterization of Lateral TMDC Memristors** E 10.3
Z. Geng, C. Zhang, S. Park, C. Ziebold, S. Sharma, F. Schwierz, K. Rossnagel† , and M. Ziegler
Mikro- und nanoelektronische Systeme, Fakultät für Elektrotechnik und Informationstechnik, Technische Universität Ilmenau, 98693 Ilmenau, Germany †Institute of Experimental and Applied Physics, Kiel University, 24098 Kiel, Germany, and Ruprecht Haensel Laboratory, Deutsches Elektronen-Synchrotron DESY, 22607 Hamburg, Germany

**10:00** **Discussion**

**10:15** **Coffee**

## Nanowires and 2D Materials Systems 2 : Erika Covi

**10:45** **In-situ optical tracking of memristive switching in MoS2** E 11.1
Joanna Symonowicz(a), Giuliana Di Martino(a)
(a) Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK

**11:00** **Electroforming-free nonvolatile MoS2 memristors with synaptic functionalities. Litty Thomas Manamel, Dr. Bikas C. Das** E 11.2
School of Physics, Indian Institute of Science Education and Research (IISER) Thiruvananthapuram, Kerala, India.

**11:15** **Study of switching and relaxation dynamics in Ag/SiOx/Pt volatile memristors** E 11.3
Mrinmoy Dutta, Stefano Brivio, Mario Alia, Sabina Spiga
CNR-IMM, Unit of Agrate Brianza, via C. Olivetti 2, 20864 Agrate Brianza (MB), Italy

**11:30** **Charge transport in dopant network processing units** E 11.4
Taglietti, F.*(1), Moro, F.(1), van de Ven, B.(2), van der Wiel, W.G.(2), Fanciulli, M.(1)
(1) Department of Material Science, University of Milano-Bicocca, Italy, (2) MESA+ Institute for Nanotechnology and BRAINS Center for Brain-Inspired Nano Systems, University of Twente, The Netherlands

**11:45** **Accurate modeling of the reset process of bipolar resistive switching devices** E 11.5
Mr Nikolaos Barmpatsalos Dr Enrique Miranda Dr Adnan Mehonic Dr Wing Ng Prof Anthony Kenyon
University College London (UCL) Universitat Autònoma de Barcelona (UAB)

**12:00** **Discussion**

**12:15** **Lunch**

**13:45** **Plenary Talk**

**14:45** **Coffee**

## Theory and Simulations : Adnan Mehonic

**15:15** INV **Bayesian Nanoelectronics** E 12.1
Damien Querlioz
Université Paris-Saclay, CNRS



**15:45** **Nonideality-Aware Training to Make Memristive Neural Networks Accurate, Robust and Energy-Efficient** E 12.2
Dovydas Joksas, Erwei Wang, Nikolaos Barmpatsalos, Wing H. Ng, Anthony J. Kenyon, George A. Constantinides, Adnan Mehonic
University College London, Imperial College London, Xilinx, University College London, University College London, University College London, Imperial College London, University College London

**16:00** **Improving the convergence of memristor-based neural networks** E 12.3
W. Quiñonez (1,2), W. Román Acevedo (1,2), M.J. Sánchez (2,3), D. Rubi (1,2)
(1) Centro Atómico Constituyentes, San Martín, Argentina, (2) Instituto de Nanociencia y Nanotecnología (INN), CONICET-CNEA, Argentina, (3) Centro Atómico Bariloche and Instituto Balseiro (UNCu), Bariloche, Argentina

**16:15** **Discussion**

**16:30** **Coffee**

## Theory and Simulations 2 : Adnan Mehonic

**16:45** **Multi-Layer Redox-Based Memristive Structures and Cross Bar Arrays for Neuromorphic Computing** E 13.1
B. Spetzler1*, S. Park1,2, T. Ivanov1,2, S. Klett1, A. Knauer2, J. Doell2, M. Ziegler1,2
1 Micro- and Nanoelectronic Systems, Department of Electrical Engineering and Information Technology, Technical University Ilmenau, Ilmenau, Germany 2 Institute of Micro and Nanotechnologies MacroNano, Department of Electrical Engineering and Information Technology, Technical University Ilmenau, Ilmenau, Germany

**17:00** **Modelling resistive switching in nanogranular films** E 13.2
Miquel López-Suárez, Claudio Melis, Luciano Colombo, and Walter Tarantino
Università degli Studi di Cagliari

**17:15** **Modified training for increased robustness in memristor-based neural networks** E 13.3
Victor Zamora, Dovydas Joksas, Adnan Mehonic
GFMC, Departamento de Fisica de Materiales, Universidad Complutense de Madrid, 28040 Madrid, Spain, Department of Electronic and Electrical Engineering, University College London, Roberts Building, Torrington Place, London WC1E 7JE, UK, Department of Electronic and Electrical Engineering, University College London, Roberts Building, Torrington Place, London WC1E 7JE, UK

**17:30** **Atomistic Insights into Electrochemical Metallization** E 13.4
Jad Jaafar
Imperial College London

**17:45** **Discussion**

**18:00** **E-MRS EU-40 Materials Prize & MRS Mid-Career Researcher Award Presentations**

## Thursday june 2

### Ferroelectric Systems : Ignasi Fina

**09:00** INV **Ferroelectric HfO-based devices for Brain-inspired Electronics** — E 14.1
Dr.-Ing. Stefan Slesazeck
NaMLab gGmbH

**09:30** **Flexible HfO2-based Ferroelectric Memristor on Mica** — E 14.3
I. Margolin, A. Chouprik, E. Korostylev, V. Mikheev and D. Negrov
Moscow Institute of Physics and Technology, Russia

**09:45** **Fabrication process for sub-8 nm HfZrO2-based ferroelectric tunnel junctions with enhanced properties** — E 14.4
Greta Segantini1,3, Benoît Manchon2, Rabei Barhoumi1, Pedro Rojo Romeo1, Ingrid Cañero Infante2, Nicolas Baboux2, Shruti Nirantar3, Matthieu Bugnet4, Simon Jeannot5, Damien Deleruyelle2, Sharath Sriram3 , Bertrand Vilquin1
1 Univ Lyon, Ecole Centrale Lyon, INSA Lyon, UCBL, CPE Lyon, CNRS, INL, UMR5270, 69130 Ecully, France 2 Univ Lyon, INSA Lyon, Ecole Centrale Lyon, UCBL, CPE Lyon, CNRS, INL, UMR5270, 69130 Ecully, France 3 Functional Materials and Microsystems Research Group and Micro Nano Research Facility, RMIT University, Australia 4 Univ Lyon, CNRS, INSA Lyon, UCBL, MATEIS, UMR 5510, 69621 Villeurbanne, France 5 STMicroelectronics, 850 Rue Jean Monnet, 38920 Crolles, France

**10:00** **Discussion**

**10:15** **Coffee**

### Ferroelectric Systems 2 : Erika Covi

**10:45** **Metal-Hf0.5Zr0.5O2-Al2O3-Metal FTJ devices and their electrical programming for neuromorphic applications** — E 15.1
Keerthana Shajil Nair, Marco Holzer, Catherine Dubourdieu, Veeresh Deshpande
1. Helmholtz-Zentrum Berlin für Materialien und Energie, Hahn-Meitner-Platz 1, 14109 Berlin, Germany 2. Freie Universität Berlin, Physical Chemistry, Arnimallee 22, 14195 Berlin Germany

**11:00** **Ferroelectric switching dynamics and multi-state memory performance in epitaxial Hf0.5Zr0.5O2 films** — E 15.2
Tingfeng Song, Florencio Sánchez, Ignasi Fina
Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra 08193, Barcelona, Spain

**11:15** **The role of oxygen vacancies on the stability and polarization of ferroelectric zirconia** — E 15.3
Veniero Lenzi, José P. B. Silva, Luís Marques
Centre of Physics of Universities of Minho and Porto, Campus de Gualtar, 4710-057 Braga, Portugal.

**11:30** **Disentangling electronic and thermal contributions to the observed light-induced resistance switching in BaTiO3 ferroelectric tu** — E 15.4
Xiao Long, Huan Tan, Florencio Sánchez, Ignasi Fina, Josep Fontcuberta
Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra 08193, Catalonia, Spain

**11:45** **Coexistence of polarization and ionic electromigration effects in the memristive response of ferroelectric oxides** — E 15.5
C. Ferreyra (1,2), M. Rengifo (1,2), M.J. Sánchez (1,3) , A. S. Everhardt (4) , B. Noheda (4), D. Rubi (1,2)
(1) Instituto de Nanociencia y Nanotecnología (INN), CONICET-CNEA, Argentina, (2) Centro Atómico Constituyentes, Av. Gral Paz 1499 (1650), San Martín, Buenos Aires, Argentina, (3) Centro Atómico Bariloche and Instituto Balseiro (Universidad Nacional de Cuyo), 8400 San Carlos de Bariloche, Río Negro, Argentina, (4) Zernike Institute for Advanced Materials, University of Groningen, 9747 AG Groningen, The Netherlands

**12:00** **Discussion**

**12:15** **Lunch**

**13:45** **Plenary Talk**

**15:00** **Coffee**



### Mott Transitions and Volatile Switching Devices : Ignasi Fina

**15:15** **Dynamics of the voltage-triggered insulator-to-metal transition** — E 16.1
Javier del Valle1, Adrien Bercher1, Nicolas M. Vargas2, Rodolfo Rocco3, Pavel Salev2, Claribel Dominguez Ordonez1, Jennifer G. Fowlie1, Pavel Lapa2, Yoav Kalcheim4, Coline Adda2, Minhan Lee2, Stefano Gariglio1, Alexey Kuzmenko1, Marcelo Rozenberg3, Ivan Schuller2, Jean-Marc Triscone1
1University of Geneva 2University of California, San Diego 3Université Paris-Saclay 4Technion-Israel Institute of Technology

**15:45** **Effect of Physical Properties on Collective Behavior of Coupled Vanadium Dioxide Oscillators for Neuromorphic Computing Applicat** — E 16.2
Stefania Carapezzi, Aida Todri-Sanial
Microelectronics Department, LIRMM, University of Montpellier, CNRS, Montpellier, France

**16:00** **Stochastic firing with exponential escape rate in Mott neurons** — E 16.3
Rodolfo Rocco, Javier del Valle, Henry Navarro, Pavel Salev, Ivan K. Schuller, Marcelo Rozenberg
Université Paris-Saclay, University of Geneva University of California-San Diego, University of California-San Diego, University of California-San Diego, University of California-San Diego, Université Paris-Saclay

**16:15** **Discussion**

**16:30** **Coffee**

### Mott Transitions and Volatile Switching Devices 2 : Veeresh Deshpande

**16:45** **Thermal strain engineering in V2O3 for Mott Insulator-based memory applications** — E 17.1
Laborie, L.*(1), Gergaud, P.(1), Tranchant, J.(2), Corraze, B.(2), Zucchi, X.(1), Hida, R.(1), Castellani, N.(1), Nolot, E.(1), Lefevre, G.(3), Carabasse, C.(1), Magis, T.(1), Bourgeois, G.(1), Besland, M.-P.(2), Janod, E.(2), David, S.(3), Andrieu, F.(1), Cario, L.(2), & Jalaguier, E.(1).
(1) Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France,(2) Université de Nantes, CNRS, Institut des Matériaux Jean Rouxel, IMN, F-44000 Nantes, France,(3) Univ. Grenoble Alpes, CNRS, CEA-LETI Minatec, LTM, 38054 Grenoble, France

**17:00** **Electric Mott Transition: application to neuromorphic devices** — E 17.2
J. Tranchant*, E. Janod, B. Corraze, M.-P. Besland, L. Cario *lead presenter
Institut des Matériaux de Nantes Jean Rouxel (IMN), Université de Nantes, CNRS, 2 rue de la Houssinière, F-44322 Nantes Cedex 3, France

**17:15** **Multimodal synchronization in stochastic Mott oscillators** — E 17.3
E. Qiu1,2,*, P. Salev2, L. Fratino3, R. Rocco3, H. Navarro2, C. Adda2, J. Li4, M-H. Lee4, Y. Kalcheim5, M. Rozenberg3, and Ivan K. Schuller2
1 Department of Electrical and Computer Engineering, University of California, San Diego, 92093, USA. 2 Department of Physics, Center for Advanced Nanoscience, University of California, San Diego, 92093, USA. 3 Laboratoire de Physique des Solides, CNRS, Université Paris Saclay, 91405 Orsay Cedex, France. 4 Materials Science and Engineering Program, University of California, San Diego, 92093, USA. 5 Faculty of Materials Science and Engineering, Technion - Israel Institute of Technology, 32000 Haifa, Israel.

**17:30** **Discussion**

**17:45** **Closing remarks**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM F

## Advances and enhanced functionalities of anion-controlled new inorganic materials-ANIM 4

*Symposium Organizers :*

Alain DEMOURGUES, University of Bordeaux, CNRS, ICMCB

Katsuro HAYASHI, Department of Applied Chemistry, Graduate School of Engineering, Kyushu University

Michael HAYWARD, University of Oxford

Sossina HAILE, Dept. of Materials Science and Engineering, Dept. of Chemistry, Applied Physics Program; Northwestern University

Dalton Transactions

## Wednesday june 1

**08:45** **Welcome and Introduction to the Symposium**

### Topochemical synthesis : Michael Hayward

**09:00** INV **Dehydration of electrochemically protonated oxides** — F I.1
Hiroshi Kageyama
Kyoto University

**09:30** **Topochemical Copper Deintercalation from Intergrowth Manganese Oxysulphide, Possible Competition of Cation and Anion Redox** — F I.2
Shunsuke Sasaki (1 and 2), Souvik Giri (1), Simon Cassidy (1), Sunita Dey (3), Maria Batuk (4), Daphne Vandemeulebroucke (4), Clare Grey (3), Joke Hadermann (4), Simon Clarke (1)
(1) Department of Chemistry, University of Oxford, Oxford OX1 3QR, UK, (2) Université de Nantes, CNRS, Institut des Matériaux de Nantes Jean Rouxel, IMN, F-44000 Nantes, France, (3) Department of Chemistry, University of Cambridge, Cambridge CB2 1EW, UK, (4) Electron Microscopy for Materials Science (EMAT), University of Antwerp, Groenenborgerlaan 171, B-2020, Antwerp, Belgium.

**09:45** **Low temperature synthesis of alkaline earth oxynitridosilicate phosphors using metal carbodiimides** — F I.3
Yuji Masubuchi, Naoki Sada, Hiroshi Shibuya, Mikio Higuchi
Hokkaido University

**10:00** **In situ and ex situ electron microscopy revealing diverse structural transformations of LaxSr2-xMnO4-δ upon gas reduction** — F I.4
Vandemeulebroucke D.* (1), Batuk M. (1), Roussel P. (2), Hadermann J. (1)
(1) EMAT, University of Antwerp, Groenenborgerlaan 171, B-2020 Antwerp, Belgium, (2) Ecole Nationale Supérieure de Chimie de Lille, Avenue Mendeleiev Bât C7 CS 90108, 59652 Villeneuve-d'Ascq CEDEX, France

**10:15** **Discussion**

### Electronic materials : Michael Hayward

**10:30** INV **Tuning the chemical and physical properties of mixed-anion compounds** — F II.1
Simon J Clarke
University of Oxford

**11:00** **Giant entropy changes in charge-transition oxides** — F II.2
Yuichi Shimakawa, Yoshihisa Kosugi, Masato Goto
Kyoto University

**11:15** **Hybrid electrons in GaV4O8 and comparison with its chalcogenides friends.** — F II.3
Aguilar-Maldonado, C., (1) Mentre, O., (1), Tsirlin, A.A., (2), Ritter, C., (3) & Arevalo-Lopez A. M. * (1).
(1) University of Lille, CNRS, UCCS-UMR8181, France (2) Augsburg University, Germany (3) ILL, France * lead presenter

**11:30** **Metastable rare earth oxysulfides synthesised by sulfur topochemical deintercalation** — F II.4
L.-B. Mvélé, S. Sasaki, M.T Caldes, C. Guillot Deudon, E. Gautron, I. Braems, E. Janod, B. Corraze, S. Jobic, L. Cario
Nantes Université, CNRS, Institut des Matériaux Jean Rouxel, IMN, F-44000 Nantes, France

**11:45** **Topotactic fluorination of intermetallics as new route for iron-based superconductivity** — F II.5
Jean-Baptiste Vaney1, Baptiste Vignolle1, Etienne Gaudin1, Etienne Durand1, Christine Labrugère2, Fabio Bernardini3, Andrés Cano4, Alain Demourgues1, Sophie Tencé1
1 CNRS, Université Bordeaux, ICMCB, UMR 5026, 33600 Pessac, France, 2 CNRS, Univ. Bordeaux, PLACAMAT UMS 3626, Pessac, F-33600, France, 3 Dipartimento di Fisica, Università di Cagliari, IT-09042 Monserrato, Italy, 4 CNRS, Université Grenoble Alpes, Institut Néel, 38042 Grenoble, France

**12:00** **Discussion**

**12:15** **Lunch and Plenary**



### Polar oxy-halides : Sossina Haile

**15:00** INV **Designing polar mixed-anion materials** — F III.1
Emma E. McCabe
Durham University

**15:30** **Crystal chemistry and properties of magnetic Aurivilius oxyfluorides** — F III.2
Olivier Mentré, Angel.Arevalo-Lopez, Marielle Huvé, Marie Colmont, Miguel Juárez-Rosete, Sébastien Saitzek
UCCS, UMR CNRS 8181, Univ. Lille-Artois-Ecole Centrale-CNRS, Villeneuve d'Ascq /Lille France

**15:45** **La2NiO2.5F3 : A New Ruddlesden-Popper Oxyfluoride with unexpected structure, optical and magnetic properties** — F III.3
Stefan G. Ebbinghaus, Jonas Jacobs, Miguel A. L. Marques, Hai-Chen Wang, Emil Dieterich
Institut für Chemie Festkörperchemie Martin-Luther-Universität Halle-Wittenberg D-06120 Halle Germany, Institut für Chemie Festkörperchemie Martin-Luther-Universität Halle-Wittenberg D-06120 Halle Germany, Institut für Physik Martin-Luther-Universität Halle-Wittenberg D-06120 Halle, Germany, Institut für Physik Martin-Luther-Universität Halle-Wittenberg D-06120 Halle, Germany, Institut für Chemie Technische Chemie I Martin-Luther-Universität Halle-Wittenberg

### Complex mixed-anion materials : Sossina Haile

**16:00** INV **Tuning optical and nonlinear optical properties from mixed anion building blocks** — F F IV.1
Houria Kabbour(a), Batoul Almoussawi(a), Mike Whangbo(b, c), Pascal Roussel(a), Sébastien Saitzek(a), Shuiquan Deng(c)
(a) Univ. Lille, CNRS, Centrale Lille, ENSCL, Univ. Artois, UMR 8181 &#8211, UCCS &#8211, Unité de Catalyse et Chimie du Solide, F-59000 Lille, France, (b) Department of Chemistry, North Carolina State University, Raleigh, NC 27695-8204, USA, (c) State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou 350002, Fujian, P. R. China

**16:30** **3D ED for determining anion order, ex situ and in situ** — F F IV.2
Maria Batuk, Daphne Vandemeulebroucke, Joke Hadermann
EMAT, Department of Physics, University of Antwerp

**16:45** **Using multiple anion chemistry to generate extremely low thermal conductivities in layered inorganic solids** — F F IV.3
Quinn D. Gibson1, Tianqi Zhao2, Luke M. Daniels1, Helen C. Walker3, Ramzy Daou4, Sylvie Hébert4, Marco Zanella1, Matthew S. Dyer1, John B. Claridge1, Ben Slater2, Michael W. Gaultois1,5, Furio Corà2, Jonathan Alaria6*, Matthew J. Rosseinsky1
1 University of Liverpool Department of Chemistry, Crown Street, Liverpool, L69 7ZD, United Kingdom, 2 University College London Department of Chemistry, 20 Gordon Street, Kings Cross, London WC1H 0AJ, United Kingdom , 3 ISIS Rutherford Appleton Laboratory, Chilton, Didcot, OX11 0QX, United Kingdom, 4 Laboratoire CRISMAT, UMR 6508 CNRS, ENSICAEN, UNICAEN, Normandie Université, 6 bd du Maréchal Juin, 14050 Caen, France , 5 Leverhulme Research Centre for Functional Materials Design, The Materials Innovation Factory, University of Liverpool 51 Oxford Street, Liverpool L7 3NY, UK , 6University of Liverpool Department of Physics, Oliver Lodge Laboratory, Liverpool, L69 ZE, United Kingdom

**17:00** **Discussion F.III and F.IV**

### : Michael Hayward

**17:15** **Synthesis of Nanostructured Molybdenum Nitride and Carbide Catalysts Using Metal Cluster Compounds as Precursors.** — F PI.1
Guillaume DUBOIS 1, Corinne LAGROST 1, Kévin GUY 1,2, Tetsuo UCHIKOSHI 2, Stéphane CORDIER 1, Fabien GRASSET 1,2, Franck TESSIER 1.
1 Univ. Rennes, CNRS, Institut des Sciences Chimiques de Rennes – UMR 6226, F-35000 Rennes, France 2 LINK, IRL3629 CNRS-Saint-Gobain-NIMS, NIMS, Tsukuba, Japan

**17:15** **Plasma Functionalized MoSe2 for Efficient Non-Enzymatic Sensing of Hydrogen Peroxide in Ultra-Wide pH Range** — F PI.2
Yang Luo 1,2, Artur Braun 1, Paul K. Chu 2
1. Empa (Swiss Federal Laboratories for Materials Science and Technology), ETH Domain, Dübendorf 8600, Switzerland 2. Department of Physics, City University of Hong Kong, Hong Kong 999077, China

**17:15** **Fe and Co-based oxyfluorides as electrodes for high temperature fuel cells / electrolysis applications** **F PI.3**
Jacinthe Gamon,* Jean-Marc Bassat,* Alain Demourgues,* Joke Hadermann,** Maria Batuk,** Mathieu Duttine,* Sébastien Fourcade,* Etienne Durand,* Christine Labrugère,*** Elise Bonnet.*
*Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), Université de Bordeaux, Bordeaux INP, CNRS, UMR 5026, 87 Avenue du Dr Albert Schweitzer, 33600 Pessac, France **EMAT, University of Antwerp, Groenenborgerlaan 171, B-2020 Antwerp, Belgium ***PLACAMAT, UMS3626, CNRS-Université de Bordeaux, 87 Avenue Docteur Albert Schweitzer, 33600 Pessac, France

**17:15** **Low temperature topochemical manipulation of Ru-containing perovskite oxides** **F PI.4**
Zhilin Liang, Michael A. Hayward
Department of Chemistry, University of Oxford, Inorganic Chemistry Laboratory, Oxford OX1 3QR, U.K

**17:15** **Structure and magnetism of soft chemically synthesized Sr2MnO2Li2Se2** **F PI.5**
Souvik Giri and Simon Clarke
Inorganic chemistry laboratory, Department of Chemistry, University of Oxford

**17:15** **Understanding of the role of anions in alkali-rich antiperovskites towards enhanced ionic conductivity** **F PI.6**
Shenghan Gao, Susumu Fujii, Thibault Broux, Cédric Tassel, Tong Zhu, Hiroki Ubukata, Kentaro Yamamoto, Kotaro Fujii, Masatomo Yashima, Yoshiharu Uchimoto, Akihide Kuwabara, Hiroshi Kageyama
Kyoto University: Shenghan Gao, Thibault Broux, Cédric Tassel, Hiroki Ubukata, Kentaro Yamamoto, Tong Zhu, Yoshiharu Uchimoto, Hiroshi Kageyama Japan Fine Ceramics Center: Susumu Fujii, Akihide Kuwabara Tokyo Institute of Technology: Kotaro Fujii, Masatomo Yashima

**17:15** **Discovering Efficient Biomass Valorisation Electrocatalysts Via Anion Control In Phosphate Based Materials** **F PI.7**
Kevin LEMOINE, Nikolay KORNIENKO, Yoshiyuki INAGUMA
Gakushuin University, Tokyo, Japan, Université de Montréal, Montréal, Canada

**17:15** **Photochromism and Photoconductivity in RE oxyhydride thin films** **F PI.8**
G. Colombi, D. Chaykina, B. Boshuizen, M. Bus, H. Schreuders, T. J. Savenije, B. Dam
Delft University of Technology, The Netherlands

**17:15** **Manipulation of the anionic and cationic sub-lattices of pyrochlores.** **F PI.9**
Edouard Boivin [1], Frédérique Pourpoint [1], Sébastien Saitzek [1], Pascal Roussel [1], Houria Kabbour [1]
[1] Univ. Lille, CNRS, Centrale Lille, ENSCL, Univ. Artois, UMR 8181-UCCS-Unité de Catalyse et Chimie du Solide, F-59000 Lille, France

**17:15** **Combining (PO4)3- and O2- (oxo)-anions into a new class of layered tungsten bronzes, with fine redox control** **F PI.10**
H. Nimoh (1, 2), R. Glaum (2), A. Cano (3), A. M. Arévalo-López (1), O. Mentré (1)
(1) UCCS (Unité de Catalyse et Chimie du Solide), Université de Lille, Centrale Lille/ ENSCL, 59000, Lille, France , (2) Institut für Anorganische Chemie, Rheinische Friedrich-Wilhelms Universität Bonn,Gerhard-Domagk-Str. 1 53121 Bonn, Germany , (3) Institut NEEL CNRS/UGA UPR2940, 25 rue des Martyrs, BP 166, 38042, Grenoble, France

**17:15** **Eco-friendly synthesis of CaFe2O4 for electrical energy storage** **F PI.11**
H. Coutinho Gomes1, S. Soreto Teixeira1, José F. Nunes2, Cristiane C.M. Salgueiro2 , A.F.L. Almeida3 , F.N.A. Freire3 and M.P.F. Graca1*
1 I3N-Physics department, University of Aveiro, 3810-193 Aveiro-Portugal 2 Department of Veterinary Medicine, State University of Ceará, Fortaleza, Ceará, Brazil 3 Department of Mechanical Engineering, Federal University of Ceará - Brazil

**18:00** **E-MRS EU-40 Materials Prize & MRS Mid-Career Researcher Award Presentations**



**Thursday june 2**

## Thin films : Katsuro Hayashi

**09:00** INV **Thin film engineering of mixed anion perovskites** **F V.1**
T. Hasegawa*(1), T. Katayama(2), A. Chikamatu(3) & Y. Hirose(1)
*(1) University of Tokyo, Japan (2) Hokkaido University, Japan (3) Ochanomizu University, Japan

**09:30** **Photochromism of rare-earth oxyhydrides studied by Positron Annihilation Spectroscopy** **F V.2**
Ziying Wu1, Tom de Krom1, Giorgio Colombi2, Diana Chaykina2,1, Henk Schut1, Marcel Dickmann3, Werner Egger3, Christoph Hugenschmidt4, Ekkes Brück1, Bernard Dam2, Stephan W.H. Eijt1
1 Department of Radiation Science and Technology, Faculty of Applied Sciences, Delft University of Technology, Delft, The Netherlands, 2 Materials for Energy Conversion and Storage, Department of Chemical Engineering, Faculty of Applied Sciences, Delft University of Technology, Delft, The Netherlands, 3 Institut für angewandte Physik und Messtechnik, Bundeswehr Universität München, Germany, 4 Physics Department and Heinz Maier-Leibnitz Zentrum (MLZ), TU München, Germany

**09:45** **Tuning the composition of tantalum oxynitride thin films thanks to reactive sputtering techniques for photocatalytic application** **F V.3**
A. Diop 1,2, A. Bousquet 1, F. Zoubian 1, C. Taviot-Guého 1, J. Cellier 1, G. Monier 3, C. Robert-Goumet 3, E. Tomasella 1, L. Thomas 2.
1 Université Clermont Auvergne, CNRS, Institut de Chimie de Clermont -Ferrand, F-63000 Clermont-Ferrand 2 Université Perpignan Via Domitia, Laboratoire Procédés Matériaux Energie Solaire (PROMES), Tecnosud-Rambla de la Thermodynamique, 66100 Perpignan cedex, France 3 Université Clermont Auvergne, Clermont Auvergne INP, CNRS, Institut Pascal, F-63000 Clermont-Ferrand, France

**10:00** **Influence of crystal structure and defects on photochromic neodymium oxyhydride thin films** **F V.4**
Chaykina, D.*(1), Nafezarefi, N.(1), Colombi, G.(1), Cornelius, S.(1,2), Bannenberg, L. J.(1), Schreuders, H.(1), Dam, B.(1)
(1)Materials for Energy Conversion and Storage, Department of Chemical Engineering, Delft University of Technology, The Netherlands (2)Fraunhofer Institute of Organic Electronics, Electron Beam and Plasma Technology (FEP), Germany

**10:15** **Discussion**

## Theory / photocatalysis : Alain Demourgues

**10:30** INV **Novel nitrogen-based solids by means of synthetic and theoretical approaches** **F VI.1**
Richard Dronskowski
Chair of Solid-State and Quantum Chemistry, RWTH Aachen University

**11:00** **Bi4AO6Cl2 (A = Ba, Sr, Ca) with Double and Triple Fluorite Layers for Visible-light Water Splitting** **F VI.2**
Chengchao Zhong, Daichi Kato, Kanta Ogawa, Cédric Tassel, Fujio Izumi, Hajime Suzuki, Shogo Kawaguchi, Takashi Saito, Akinori Saeki, Ryu Abe,* Hiroshi Kageyama*
Chengchao Zhong (Graduate School of Engineering, Kyoto University, Kyoto, Japan), Daichi Kato (Graduate School of Engineering, Kyoto University, Kyoto, Japan), Kanta Ogawa (Graduate School of Engineering, Kyoto University, Kyoto, Japan), Cédric Tassel (Graduate School of Engineering, Kyoto University, Kyoto, Japan), Fujio Izumi (Graduate School of Engineering, Kyoto University, Kyoto, Japan), Hajime Suzuki (Graduate School of Engineering, Kyoto University, Kyoto, Japan), Shogo Kawaguchi (SPring-8, Japan Synchrotron Radiation Research Institute, Hyogo, Japan), Takashi Saito (High Energy Accelerator Research Organization (KEK), Ibaraki, Japan), Akinori Saeki (Graduate School of Engineering, Osaka University, Osaka, Japan), Ryu Abe (Graduate School of Engineering, Kyoto University, Kyoto, Japan), Hiroshi Kageyama (Graduate School of Engineering, Kyoto University, Kyoto, Japan)

**11:15** **Competition between the α- and the layered LaOInS2 structure types upon cationic and anionic substitution: impact on the photoco** **F VI.3**
Maxime Braun (1), Sébastien Saitzek (1), Edouard Boivin (1), Laurent Cario (2), Pascal Roussel (1), Houria Kabbour (1)
(1) Univ. Lille, CNRS, Centrale Lille, ENSCL, Univ. Artois, UMR 8181-UCCS-Unité de Catalyse et Chimie du Solide, F-59000 Lille, France (2) Institut des Matériaux Jean Rouxel (IMN), Université de Nantes, CNRS, 2 rue de la Houssinière, 44322 Nantes Cedex 3, France

**11:30** **Bismuth Oxyfluoride Compounds as Emerging Photocatalytic Materials: from powders to thin films** **F VI.4**

Pierre BONNET (1), Sara IBRAHIM (1), Angelique BOUSQUET (1), Mohamed SARAKHA (1), Jiushan CHENG (2) , Wenshi HUANG (2), Dandan CUI (2), Ying SUN (2) , Lei WANG (2) , Cong WANG (2), Audrey BONDUELLE (3) and Céline PAGIS (3)
(1) Université Clermont Auvergne, Institut de Chimie de Clermont-Ferrand (ICCF), 24 Avenue Blaise Pascal, 63178 Aubière Cedex, France (2) Center for Condensed Matter and Materials Physics, Department of Physics, Beihang University, Beijing (3) IFP Energies Nouvelles (IFPEN), Solaize, France

**11:45** **Polar oxysulfides for water splitting photocatalysis** **F VI.5**

Sandy Al Bacha* (1,2), Sébastien Saitzek (1), Emma E. McCabe (2) & Houria Kabbour (1).
(1) Université Lille, CNRS, Centrale Lille, ENSCL, Université Artois, UMR 8181, UCCS, Unité de Catalyse et Chimie du Solide, F-59000 Lille, France. (2) School of Physical Sciences, University of Kent, Canterbury, Kent CT2 7NH, U.K, Departement of Physics, Durham University, Durham DH1 3LE, U.K.

**12:00** **Discussion**

**12:15** **Lunch and Plenary**

## Energy materials : Michael Hayward

**15:00** INV **Towards Reversible High-Voltage Multi-Electron Reactions in Alkali-Ion Batteries Using Vanadium Phosphates** **F VII.1**

Laurence Croguennec 1,3, Edouard Boivin 1,2,3, Long H. B. Nguyen 1,2,3, Sunkyu Park 1,2,3,4, Chloé Pablos 1,2,3, Emmanuel Petit 1,3, Jacob Olchowka 1,3, Dany Carlier 1,3, Antonella Iadecola 3, Jean-Noël Chotard 2,3 and Christian Masquelier 2,3
1 Université de Bordeaux, CNRS, Bordeaux INP, ICMCB UMR CNRS #5026, Pessac, F-33600, France 2 Laboratoire de Réactivité et de Chimie des Solides, Université de Picardie Jules Verne, CNRS-UMR 7314, F-80039 Amiens Cedex 1, France 3 RS2E, Réseau Français sur le Stockage Electrochimique de l'Energie, FR CNRS #3459, Amiens F-80039 Cedex 1, France 4 TIAMAT, 15 Rue Baudelocque, 80000 Amiens

**15:30** **Hexagonal Argyrodites: A New Family for Lithium Ion Conduction** **F VII.2**

Alexandra Morscher, Matthew S. Dyer, Benjamin B. Duff, Guopeng Han, Jacinthe Gamon, Luke M. Daniels, Yun Dang, Wesley Y. Surta, Craig M. Robertson, Frédéric Blanc, John B. Claridge and Matthew J. Rosseinsky
University of Liverpool, University of Liverpool, University of Liverpool, University of Liverpool, University of Liverpool, University of Liverpool, University of Liverpool, University of Liverpool, University of Liverpool, University of Liverpool, University of Liverpool,

**15:45** **Modulating the properties of KVPO4F high voltage positive electrode through anionic substitution** **F VII.3**

Romain Wernert, Long Nguyen, François Fauth, Lorenzo Stievano, Antonella Iadecola, Laure Monconduit, Dany Carlier, Laurence Croguennec
Université de Bordeaux, CNRS, Bordeaux INP, ICMCB UMR CNRS #5026, Pessac, F-33600, France, Université de Bordeaux, CNRS, Bordeaux INP, ICMCB UMR CNRS #5026, Pessac, F-33600, France, CELLS-ALBA synchrotron, E-08290, Cerdanyola del Vallès, Barcelona, Spain, ICGM, Univ. Montpellier, CNRS, Montpellier, France ,RS2E, Réseau Français sur le Stockage Electrochimique de l'Energie, FR CNRS #3459, Amiens F-80039 Cedex 1, France ,ICGM, Univ. Montpellier, CNRS, Montpellier, France , Université de Bordeaux, CNRS, Bordeaux INP, ICMCB UMR CNRS #5026, Pessac, F-33600, France, Université de Bordeaux, CNRS, Bordeaux INP, ICMCB UMR CNRS #5026, Pessac, F-33600, France

**16:00** **A new mixed anion lithium conductor of the closo-carborane family** **F VII.4**

Thompson, K*, Daniels, L, Gamon, J, Surta, T.W, Dang, Y, Claridge, J.B and Rosseinsky, M.J.
Department of Chemistry, University of Liverpool, UK

**16:15** **Discussion**

## Tuning oxynitride, nitrides and oxyfluorides : Michael Hayward

**16:30** INV **Nitride Tuning of Transition Metal Oxides** **F VIII.1**

Amparo Fuertes
Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra (Spain)



**17:00** **An innovative route to nanometric transition metal nitrides and carbides** **F VIII.2**

Franck Tessier 1, Guillaume Dubois 1, Kévin Guy 1,2,3, Fabien Grasset 1,3, Stéphane Cordier 1, Helena Kaper 2, Caroline Tardivat 2, Naoki Ohashi 3,4, Tetsuo Uchikoshi 3,4, David Lechevalier 3
1 Univ. Rennes, CNRS, Institut des Sciences Chimiques de Rennes – UMR 6226, 35000 Rennes, France 2 Ceramic Synthesis and Functionalization Laboratory, UMR 3080, SGR Provence-CNRS, 84306 Cavaillon, France 3 CNRS - Saint-Gobain - NIMS, IRL 3629, Laboratory for Innovative Key Materials and Structures (LINK), National Institute for Materials Science, Tsukuba 305-0044, Japan. 4 Research Center for Functional Materials, National Institute for Materials Sciences, Tsukuba, Japan

**17:15** **Surface Layer on Ternary Nitrides for Electrocatalytic Reactions** **F VIII.3**

Yao Yuan [1,2], Samira Adimi [2], Peilin Liao [3], Ye Zhu [4], Jiacheng Wang [5], Minghui Yang [2] and J. Paul Attfield* [1]
[1] Centre for Science at Extreme Conditions and School of Chemistry, University of Edinburgh, Edinburgh EH9 3JZ, UK, [2] Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo 315201, China, [3] School of Materials Engineering, Purdue University, West Lafayette IN 47907, USA, [4] Department of Applied Physics, Hong Kong Polytechnic University, Hong Kong, China, [5] Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai 200050, China.

**17:30** **Solid-state chemistry of heteroanionic titanium oxide-fluoride compounds** **F VIII.4**

D. Dambournet, C. Legein, M. Body, A. Demourgues, A. G. Squires, B. J. Morgan D. Dambournet,1,2 C. Legein,3 M. Body,3 A. Demourgues4, A. G. Squires5, B. J. Morgan5 1 Sorbonne Université, CNRS, Physico-chimie des électrolytes et nano-systèmes interfaciaux, PHENIX, F-75005 Paris, France 2 Réseau sur le Stockage Electrochimique de l'Energie (RS2E), FR CNRS 3459, 80039 Amiens cedex, France 3 Institut des Molécules et des Matériaux du Mans (IMMM), UMR 6283 CNRS, Le Mans Université, Avenue Olivier Messiaen, 72085 Le Mans Cedex 9, France 4 CNRS, Univ Bordeaux, ICMCB, UPR 9048, F-33600 Pessac, France 5 Department of Chemistry, University of Bath, Claverton Down, BA2 7AY, United Kingdom

**17:45** **Discussion and Closing**

# SYMPOSIUM G

## Materials for sustainable energy technologies (M-SET)

*Symposium Organizers :*

Adam F. LEE, RMIT University

Arumugam MANTHIRAM, University of Texas at Austin

Pierre RUTERANA, Centre de Recherche sur les ions les matériaux et la photonique

Yuping WU, Nanjing University of Technology

Selected papers will be published
in a Special Issue of Materials Today Chemistry (Elsevier).

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium, Symposium Organizers**

### Electrodes : Vincenzo PALERMO, Yuping Wu

**09:00** INV **Deciphering the electrode behavior of lithium metal under supergravity** G E.1
Yuliang Gao, Fahong Qiao, Jingyuan You, Zengying Ren, Nan Li, Kun Zhang, Chao Shen, Ting Jin, Keyu Xie*
State Key Laboratory of Solidification Processing, Center for Nano Energy Materials, School of Materials Science and Engineering, Northwestern Polytechnical University

**09:30** **Disentangling the origin of charge storage in laser-deposited nitrogen-doped nanocarbon-NiO electrodes** G E.2
Pablo García Lebière, (a) Ángel Pérez del Pino, (a) Enikö György, (a,b) Constantin Logofatu, (c) Denys Naumenko, (d) Heinz Amenitsch, (d) Piu Rajak, (e) Regina Ciancio, (e)
(a) Institute of Materials Science of Barcelona, ICMAB-CSIC, Spain, (b) National Institute for Lasers, Plasma and Radiation Physics, Romania, (c) National Institute for Materials Physics, Romania, (d) Institute of Inorganic Chemistry, Graz University of Technology, Austria, (e) Instituto Officina dei Materiali-CNR, Trieste, Italy

**09:45** **The Proton Surface Transfer Property in BZY from Density Functional Theory** G E.3
ZhaoWenjuan, ZhuBin*, Wangjun*, LinBin
Southeast University, University of Electronic Science and Technology of China.

**10:00** **Impact of the Iron-Doping on the structural integrity of Co-free Li-Rich Layered oxides (LRLO) for positive electrodes in Lithiu** G E.4
Mariarosaria Tuccillo (a), Arcangelo Celeste (a), Laura Silvestri (b), Sergio Brutti (a)
(a) University of Rome La Sapienza (b) ENEA Research Center Casaccia

**10:15** **Discussion Electrodes I**

**10:30** **Effect of partial conductivities on the polarisation resistance of positrodes for proton ceramic fuel cells and electrolysers** G E.6
Ragnar Strandbakke, Kalpana Singh, Truls Norby
Centre for Materials Science and Nanotechnology, Department of Chemistry, University of Oslo, FERMiO, Gaustadalléen 21, NO-0349 Oslo, Norway

**10:45** **Thermoelectric performance of nanostructured ??FeSi2 alloys synthesized by ?in situ? SPS** G E.7
Linda Abbassi a,b, David Mesguich b, David Berthebaud c, Bhuvanesh Srinivasan c,d, Sylvain Le Tonquesse c, Takao Mori d, Geoffroy Chevalier b, Claude Estournès b, Emmanuel Flahaut b, Romain Viennois a, Mickaël Beaudhuin a* *presenting person
a ICGM, Univ. Montpellier, CNRS, ENSCM, Montpellier, France, b CIRIMAT, Université de Toulouse, CNRS, France, c CNRS-Saint Gobain-NIMS, IRL 3629, LINK, Tsukuba, Japan, d WPI-MANA, NIMS, Tsukuba ? 1-1 Namiki Tsukuba, Ibaraki 305-0044, Japan

**11:00** **Unveiling the electrochemistry of conjugated alkali-ion disulfonyl-methide as organic positive electrode materials** G E.8
Yan Zhang a,b, Petru Apostol a, Xiaohua Chen b, Xiaolong Guo a, Xuelian Liu a, Jiande Wang a,*, Alexandru Vlad a,*
a Institute of Condensed Matter and Nanosciences, Molecular Chemistry, Materials and Catalysis, Université catholique de Louvain, Louvain-la-Neuve, Belgium, b College of Materials Science and Engineering, Hunan Province Key Laboratory for Advanced Carbon Materials and Applied Technology, Hunan University, Changsha 410082, Hunan, P. R. China.

**11:15** **Electrophoretic coating of LiFePO4/Graphene oxide on carbon bers as cathode electrodes for structural lithium ion batteries** G E.9
Jaime S. Sanchez a, Johanna Xu a, Zhenyuan Xia a, b, *, Jinhua Sun a, Leif E. Asp a, Vincenzo Palermoa,b,**
a) Industrial and Materials Science, Chalmers University of Technology, Hosalsvagen 7B, 41258, Goteborg, Sweden b) Istituto per la Sintesi Organica e la Fotoreattivita`, CNR, via Gobetti 101, 40129, Bologna, Italy



**11:30** INV **Effect of pre-lithiation on solid electrolyte interphase of SiCx electrodes combined with Ni-rich cathodes for electric vehicles** G E.10
Esen, E.* (1), Diddens, D. (1), de Meatza, I. (2), Schmuck, M. (3), Winter, M. (1,4), & Paillard, E. (5).
(1) Helmholtz-Institute Münster IEK-12, Forschungszentrum Jülich GmbH, Corrensstraße 46 48149 Münster, Germany, (2) CIDETEC, Basque Research and Technology Alliance (BRTA), Paseo Miramon 196, 20014, Donostia-San Sebastian, Spain, (3) VARTA Micro Innovation GmbH, Stremayrgasse 9, 8010 Graz, Austria, (4) MEET - Münster Electrochemical Energy Technology, Corrensstraße 46, 48149 Münster, (5) Politecnico di Milano, Dept. of Energy Via Lambruschini 4, 20156 Milan, Italy.

**12:00** **Discussion Electrodes II**

### Peroskytes : Judith Driscoll, Pierre Ruterana

**13:30** INV **The Electronic Structure of MAPI-Based Perovskite Solar Cells: Detailed Band Diagram Determination by Photoemission Spectroscopy** G PER.1
Tim Hellmann, Chittaranjan Das, Tobias Abzieher, Clément Maheu, Michael Wussler, Ulrich Paetzold, Thomas Mayer, Wolfram Jaegermann
Tim Hellmann, Chittaranjan Das, Clément Maheu, Michael Wussler, Thomas Mayer, Wolfram Jaegermann: Surface Science Group Materials Science Department Technical University of Darmstadt Alarich-Weiss-Straße 2, 64287 Darmstadt, Germany Tobias Abzieher, Ulrich Paetzold: Light Technology Institute Karlsruhe Technology Institute Engesserstraße 13, 76131 Karlsruhe, Germany

**14:00** **Nickel oxide and copper-based inorganic hole transport layers in perovskite solar cells: a first-principles study.** G PER.2
A. Pecoraro (1), P. Delli Veneri (2), M. Pavone (3), A. B. Muñoz-García (1)
(1) Department of Physics "E. Pancini", University of Naples "Federico II", Naples, Italy (2) Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA)- Portici, Research Centre, Piazzale E. Fermi 1, Portici, NA, Italy (3) Department of Chemical Science, University of Naples "Federico II", Naples, Italy

**14:15** **Strong Excitonic Effects in Zero-Dimensional Vacancy-Ordered Perovskites (Cs2TiX6)** G PER.3
Seán R. Kavanagh, Shanti Liga, Christopher N. Savory, Gerasimos Konstantatos, Aron Walsh, David O. Scanlon
Thomas Young Centre and Department of Chemistry, University College London, London WC1H 0AJ, U.K, Thomas Young Centre and Department of Materials, Imperial College London, London SW7 2AZ, U.K, ICFO-Insitut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology, Casteldefels, 08860 Barcelona, Spain, Department of Materials Science and Engineering, Yonsei University, Seoul 03722, Republic of Korea, ICREA-Institució Catalana de Recerca i Estudia Avançats, Lluis Companys 23, 08010 Barcelona, Spain

**14:30** **Synthesis, crystal structure, band gap energy and Seebeck coefficient of trigonal Srx+1TiS3-y chalcogenide perovskites** G PER.4
Jinan Hussein Awadh Alshuhaib 1, Jose Francisco Fernández1,2, Julio Bodega1, José R. Ares 1, Isabel J. Ferrer 1,2, Fabrice Leardini 1,2
1 Departamento de Física de Materiales, Universidad Autónoma de Madrid, Campus de Cantoblanco, E-28049 Madrid, Spain. 2 Instituto Nicolás Cabrera, Universidad Autónoma de Madrid, Campus de Cantoblanco, E-28049 Madrid, Spain.

**14:45** **Disorder Enhanced Raman Scattering** G PER.5
Menahem, Matan*(1), Asher, Maor(1), Olle Hellman(1), Safran, Sam(1), Benshalom, Nimrod(1), Aharon, Sigalit(1), Korobko, Roman(1), Yaffe, Omer(1)
(1) Weizmann Institute of Science, Israel * lead presenter

**15:00** **Discussion Perovskytes I**

**15:15** **Impact of small compositional and nanoscale morphology variations on the efficiency and stability of perovskite solar cells** G PER.6
Lyubov A. Frolova (1), Nikita A. Emelyanov (1), Victoria V. Ozerova (1), Olga A. Kraevaya (1), Gennady V. Shilov (1), Sergey M. Aldoshin (1) and Pavel A. Troshin (2, 1)
(1) Institute for Problems of Chemical Physics of Russian Academy of Sciences (IPCP RAS), Semenov ave. 1, 142432, Chernogolovka, Moscow region, Russia (2) Faculty of Chemistry, Silesian University of Technology, Strzody 9, 44-100 Gliwice, Poland

**15:30** **Low-cost scalable synthesis of efficient HTL materials for perovskite solar cells via oxidative polymerization of triarylamines** **G PER.7**
O.A. Kraevaya,1 A.F. Latypova,1 A.A. Sokolova,1,2 A.A. Seleznyova,1,2 L. A. Frolova,1 P.A. Troshin3,1
1Institute for Problems of Chemical Physics of Russian Academy of Sciences, Chernogolovka, Russia 2Faculty of Fundamental Physics & Chemical Engineering, Lomonosov Moscow State University, Moscow, Russia 3Silesian University of Technology, Gliwice, Poland

**15:45** **First-principles investigation of optoelectronic and transport properties of double perovskite Cs2TiX6 (X = Cl, Br)** **G PER.8**
M. Khuili (1,2), G. El Hallani (3), N. Fazouan(3), El Houssine Atmani (3), El Hassan Abba (1), Adil Es-Smairi (3), Elhoussaine Maskar (4), Samah Al-Qaisi (5)
(1)Higher School of Technology, Sultan Moulay Slimane University, 54000 Khénifra. Morocco (2) CRMEF of Beni Mellal-Khénifra, Morocco (3) Laboratory of Physics of Condensed Matters and Renewables Energies, Faculty of Sciences and Technologies, Hassan II University of Casablanca, B.P 146, 20650 Mohammedia, Morocco (4) Nanomaterial and Nanotechnology Unit. E. N. S. Rabat. Energy Research Center, Faculty of Sciences, Mohammed V University, B.P. 1014 Rabat, Morocco (5) Palestinian Ministry of Education and Higher Education, Nablus, Palestine

**16:00** **Efficient and stable copper-based hole transport layers for perovskite solar cells** **G PER.9**
Alexander W. Stewart, Bernabé Marí Soucase
Universidad Politécnica de Valencia

**16:15** INV **Towards High-Performance, Low-Temperature Solid Oxide Cells with Vertically Aligned Nanocomposite Films** **G PER.10**
Matthew P. Wells, Adam J. Lovett & Judith L. MacManus-Driscoll
Department of Materials Science and Metallurgy, University of Cambridge, Cambridge CB3 0FS, United Kingdom

**16:45** **Discussion Perovskytes II**

**: Adam Lee, Arumugam Mathiram, Pierre Ruterana, Yuping Wu**

**17:00** **The Polycationic Doping Effect on the Ionic Conductivity Properties of LATP Solid Electrolyte** **G P1.1**
A. Mashekova1,2, Ye. Baltash1, M. Yegamkulov1,2, Z.Bakenov1,2, I. Trussov1, A. Mukanova1,2
1Institute of Batteries, 53, Kabanbay Batyr Avenue, Z05P4X0 Nur-Sultan, Kazakhstan, 2Nazarbayev University, 53, Kabanbay Batyr Avenue, Z05P4X0 Nur-Sultan, Kazakhstan

**17:00** **Composite Anode Based on Red Phosphorus for Lithium-Ion Batteries** **G P1.2**
Z.Yelemessova, A.Nauryzbaeva, A. Mashekova, Z. Bakenov, A. Mukanova
Institute of Batteries, 53, Kabanbay Batyr Avenue, Z05P4X0 Nur-Sultan, Kazakhstan

**17:00** **Enhancing the Ionic Conductivity in Li-Garnet Thin Film Solid State Electrolytes** **G P1.3**
M. Yegamkulov, A. Shongalova, B. Uzakbaiuly, A. Mukanova, Zh. Bakenov
School of Engineering and Digital Science, Nazarbayev University, Z05P4X0 Nur-Sultan, Kazakhstan

**17:00** **Piezoelectric devices for generation of electrical energy** **G P1.4**
Irinela Chilibon
National Institute of Research and Development for Optoelectronics, INOE-2000 409 Atomistilor Street, P.O. Box MG-5, 077125, Magurele, Romania

**17:00** **Deep insights into kinetics and structural evolution of dimension-engineered TiNb2O7 anode for lithium storage** **G P1.5**
Wenlei Xu[1], Yaolin Xu[2], Veronika Grzimek[2], Thorsten Schultz[3], Yan Lu[2], Norbert Koch[3], Nicola Pinna[1]
[1] Institut für Chemie and IRIS Adlershof, Humboldt-Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany [2] Department of Electrochemical Energy Storage, Helmholtz-Zentrum Berlin für Materialien und Energie, 14109 Berlin, Germany [3] Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Albert-Einstein Str. 15, 12489 Berlin, Germany

**17:00** **Computational Design of Thermoelectric Alloys** **G P1.6**
Jiaxing Qu
University of Illinois at Urbana-Champaign



**: Adam Lee, Arumugam Mathiram, Pierre Ruterana, Yuping Wu**

**17:00** **Cu2P/nickel foam as a bifunctional electrocatalyst for urea and hydrazine assisted water splitting** **G P1.7**
Harshad A. Bandal, Hern Kim*
Department of Energy Science and Technology, Environmental Waste Recycle Institute, Myongji University, Republic of Korea

**17:00** **Laser-pyrolysis Ge-Si based nanoparticles and their composites with reduced Graphene oxide for Li-ion battery anodes** **G P1.8**
C. Fleaca 1, F. Dumitrache 1, V. Craciun 1, M. Dumitru 1, L. Gavrila-Florescu 1, C. Ungureanu 2, M. Buga 2
1 NILPRP – National Institute for Lasers, Plasma and Radiation Physics, Atomistilor str. No.409, Magurele-Bucharest, Romania, 2 ICSI – National Institute for Isotopic and Cryogenic Technologies, Uzinei str. No.4, Rm. Valcea, Romania

**17:00** **Preparation of a Wearable Single Electrode Triboelectric Nanogenerator** **G P1.9**
Y. Nurmakanov, G. Kalimuldina, R. Kruchinin
Y. Nurmaknov and R. Kruchinin: Nazarbayev University, School of Engineering and Digital Sciences, Nazarbayev University, Kabanbay Batyr Ave. 53, Nur-Sultan 010000 Kazakhstan G. Kalimuldina: Nazarbayev University, Department of Mechanical and Aerospace Engineering, School of Engineering and Digital Sciences, Nazarbayev University, Kabanbay Batyr Ave. 53, Nur-Sultan 010000 Kazakhstan

**17:00** **Design of a membrane-less decoupled amphoteric Zn-MnO2 battery using immobilised pH gels** **G P1.10**
Durena, R.*(1), Zukuls, A.(1), Vanags, M.(1)
(1) The Institute of Materials and Surface Engineering, Riga Technical University, Latvia

**17:00** **PAN-(PAN-PVA)-PVA based layered solid polymer electrolyte for lithium-ion batteries** **G P1.11**
a)Anar Arinova, a)Yer-Targyn Tleukenov, a)Nurbolat Issatayev, a)Gulnara Basharova, a)Arailym Nurpeissova, b)Gulnur Kalimuldinab, a,c) Zhumabay Bakenova
a National Laboratory Astana, 53 Kabanbay Batyr Ave., Nur-Sultan, 010000, Kazakhstan b Department of Mechanical and Aerospace Engineering, School of Engineering and Digital Sciences, Nazarbayev University, 53 Kabanbay Batyr Ave., Nur-Sultan, 010000, Kazakhstan c Department of Chemical and Materials Engineering, School of Engineering and Digital Sciences, Nazarbayev University, 53 Kabanbay Batyr Ave., Nur-Sultan, 010000, Kazakhstan

**17:00** **Synthesis and characterization of band gap tuned Cu2Zn(Sn1 – xGex)S4 monograin powders** **G P1.12**
I. Mengü, M. Kauk-Kuusik, K. Muska, V. Mikli, R. Kaupmees, J. Krustok, M. Grossberg
Department of Materials and Environmental Technology, Tallinn University of Technology, Ehitajate tee 5, 19086 Tallinn, Estonia

**17:00** **Silicon Clathrates films for Photovoltaic Appplications Investigated by Surface Photovoltage** **G P1.13**
Vollondat, R.*(1), Roques, S.(1), Chevalier, C.(2), Bartringer, J.(1), Rehspringer, J.-L.(3), Slaoui, A.(1), Fix, T.(1)
(1) Laboratoire des Sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (ICube), CNRS and University of Strasbourg, 23 rue du Loess, 67037 Strasbourg, France (2) Université de Lyon, Institut des Nanotechnologies de Lyon INL-UMR5270, CNRS, INSA Lyon, 7 Avenue Jean Capelle, 69621 Villeurbanne, France (3) Institut de Physique et Chimie des Matériaux de Strasbourg (IPCMS), UMR7504, CNRS and University of Strasbourg, 23 rue du Loess, 67034 Strasbourg, France

**17:00** **Continuous hydrothermal flow synthesis of Li-ion batteries' cathodic materials** **G P1.14**
Federico Barbon(1), Dario Mosconi(2), Silvia Gross(1)
(1)Università degli Studi di Padova, Italy (2)Particular Materials srl, Cadoneghe(Padova), Italy

**17:00** **Alloying leads to drastic reduction of lattice thermal conductivity of half-Heusler compounds** **G P1.15**
Rasmus Tranås, Ole Martin Løvvik, Kristian Berland
Department of Mechanical Engineering and Technology Management, Norwegian University of Life Sciences, SINTEF Sustainable Energy Technology, Department of Mechanical Engineering and Technology Management, Norwegian University of Life Sciences

**17:00** **Bioconstruction of electro active Cu morphologies with possible application in CO2 reduction** **G P1.16**

*Iacob, M.T. (1, 2), Stamatin, I. (1,2), Ghinea, A. (3), Diac, C. (1), Nechita, C. (2), Moisescu, C. (3), Ardelean, I. (3), Stamatin, S.N (1,2)
(1) 3Nano-SAE Research Centre, PO Box MG-38, Bucharest – Magurele, Romania
(2) University of Bucharest, Physics, ICUB, Bucharest, Romania (3) Institute of Biology Bucharest, Romanian Academy, Splaiul Independentei 296, Bucharest 060031, Romania

**17:00** **Coupling electrochemical active Li4Ti5O12 with PVDF as a composite solid electrolyte for solid state lithium metal battery** **G P1.17**

Qi Zhou1, Rui Sun1, Xiaosong Xiong1, Bohao Peng1, Yusong Zhu1, Yuhui Chen1, Zhaogeng Wang1, Yuping Wu1,2*
1State Key Laboratory of Materials-oriented Chemical Engineering, School of Energy Science and Engineering, Nanjing Tech University, Nanjing, Jiangsu 211816, P. R. China,2School of Energy and Environment, South East University, Nanjing, Jiangsu 211189, P. R. China

**17:00** **The ionic conductive propterties of two-dimensional ZnO-Zn6Al2O9 nanocomposite membrane used for advanced fuel cells** **G P1.18**

Liwen Huang, Xin Chen, Yan Wu*
Engineering Research Center of Nano-Geo Materials of Ministry of Education, Faculty of Materials Science and Chemistry, China University of Geosciences, 388 Lumo Road, Wuhan 430074, China

**17:00** **Interface channels accelerate ion transport through solid carbonate coated Gd0.1Ce0.9O1.9 (GDC)** **G P1.19**

Hao Wang, Wenjuan Zhao, Jingjing Liu, Enyi Hu, Yifei Zhang, Shuo Wan, Bin Zhu, Qi Fan, Faze Wang
Jiangsu Provincial Key Laboratory of Solar Energy Science and Technology/Energy Storage Research Center, School of Energy and Environment, Southeast University, No. 2 Si Pai Lou, Nanjing, Jiangsu 210096, P. R. China

**17:00** **High-quality electrolytes for low-temperature solid oxide fuel cells** **G P1.20**

Yingbo Zhang, Jiamei Liu, Xin Jia, Decai Zhu, Xinfang Li, Yuzhao Ouyang, Xiaowei Gao, Jie Yu, Chengjun Zhu*
Key Laboratory of Semiconductor Photovoltaic Technology of Inner Mongolia Autonomous Region, School of Physical Science and Technology, Inner Mongolia University, 235 West Daxue Street, Hohhot, 010021, China

**17:00** **Research on Composite Oxide Materials as Composite Electrolytes for Low Temperature Solid Oxide Fuel Cells** **G P1.21**

Yuzhao Ouyang, Jiamei Liu, Yingbo Zhang, Xin Jia, Decai Zhu, Xinfang Li, Xiaowei Gao, Jie Yu, Chengjun Zhu*
Key Laboratory of Semiconductor Photovoltaic Technology of Inner Mongolia Autonomous Region, School of Physical Science and Technology, Inner Mongolia University, 235 West Daxue Street, Hohhot, 010021, China

**17:00** **Improvement of solid oxide fuel cell performance by semiconductor-ionic conductor composite electrolyte** **G P1.22**

Xinfang Li, Jiamei Liu, Xin Jia, Yingbo Zhang,Decai Zhu, Yuzhao Ouyang, Xiaowei Gao, Jie Yu, Chengjun Zhu*
Key Laboratory of Semiconductor Photovoltaic Technology of Inner Mongolia Autonomous Region, School of Physical Science and Technology, Inner Mongolia University, 235 West Daxue Street, Hohhot, 010021, China

**17:00** **Performance evaluation of Ca2.9-xBi0.1PrxCo4O9−δ cathode for anode-supported intermediate temperature solid oxide fuel cells** **G P1.23**

Xin Jia, Jiamei Liu, Yingbo Zhang, Decai Zhu, Xinfang Li, Yuzhao Ouyang, Xiaowei Gao, Jie Yu, Chengjun Zhu*
Key Laboratory of Semiconductor Photovoltaic Technology of Inner Mongolia Autonomous Region, School of Physical Science and Technology, Inner Mongolia University, 235 West Daxue Street, Hohhot, 010021, China

**17:00** **Azaadamantane derivatives enable improved thermal and photochemical stability of multication lead halide perovskites** **G P1.24**

Victoria V. Ozerova (1,2), Nikita A. Emelianov (1), Alexey Yu. Sukhorukov (3), Lyubov A. Frolova (1), and Pavel A. Troshin (1)
(1) The Institute for Problems of Chemical Physics of the Russian Academy of Sciences (IPCP RAS), Semenov Prospect 1, Chernogolovka, 141432, Russia, (2) D. I. Mendeleev University of Chemical Technology of Russia, Miusskaya sq. 9, 125947, Moscow, Russia, (3) N. D. Zelinsky Institute of Organic Chemistry of Russian Academy of Sciences, Leninsky Prospect, 47, Moscow



**17:00** **Molecular Engineering of Polytriarylamine-Based Hole-Transport Materials for p-i-n Perovskite Solar Cells: Methyl Groups Matter** **G P1.25**

Mohamed M. Elnaggar,a,b,c,* Lavrenty G. Gutsev,a,d Nikita A. Emelianov,a Petr M. Kuznetsov,a Lyubov A. Frolova,a Sergey M. Aldoshina and Pavel A. Troshine,a
a The Institute for Problems of Chemical Physics of the Russian Academy of Sciences, Semenov Prospect 1, Chernogolovka 141432, Russia b Moscow Institute of Physics and Technology, Dolgoprudny 141700, Moscow, Russia c Department of Physics, Faculty of Science, Tanta University, Tanta 31527, Egypt d Institute for Micromanufacturing, Louisiana Tech University, Ruston LA 71272, United States e Silesian University of Technology, Akademicka 2A, Gliwice 44-100, Poland

**Tuesday may 31**

## Thermoelectrics I : Emanuel Guilmeau, Romain Viennois

**09:00** INV **Superior thermoelectric performance of SiGe nanowires epitaxially integrated into thermal micro-harvesters** — G TH.1
Jose Manuel Sojo Gordillo (a), Carolina Duque Sierra (a), Gerard Gadea Diez (e), Jaime Segura (b), Valentina Bonino (b), Marc Nuñez Eroles (a), Juan Carlos Gonzalez-Rosillo (a), Denise Estrada-Wiese (c), Marc Salleras (c), Marc Chaigneau (f), Luis Fonseca (c), Alex Morata (a), Albert Tarancón (a,d).
(a) Catalonia Institute for Energy Research (IREC), Jardins de Les Dones de Negre 1, 08930, Sant Adrià de Besòs, Barcelona, Spain (b) The European Synchrotron Radiation Facility (ESRF), 71, Avenue des Martyr, 38043, Grenoble, France (c) Institute of Microelectronics of Barcelona, IMB-CNM (CSIC), C/Til□lers s/n (Campus UAB), 08193, Bellaterra, Barcelona, Spain (d) Catalan Institution for Research and Advanced Studies (ICREA), Passeig Lluís Companys 23, 08010, Barcelona, Spain (e) University of Basel, Physics Department, Klingelbergstrasse 82, 4056, Basel (f) HORIBA, France Jobin Yvon S.A.S., CS 45002, Palaiseau, France

**09:30** **Electrical and thermal transport in type-I clathrate nanowires** — G TH.2
Luznik, M.*(1), Lientschnig, G. (1), Taupin, M. (1), Steiger-Thirsfeld, A. (2), and Paschen, S. (1)
(1) Institute of Solid State Physics, TU Wien, Wiedner Hauptstr. 8-10, 1040 Vienna, Austria (2) USTEM, TU Wien, Wiedner Hauptstr. 8-10, 1040 Vienna, Austria * lead presenter

**09:45** **Thermoelectric properties of co-doped Tetrahedrite with Se and Ni** — G TH.3
Moço, D. *(1), Lopes, E.(1), Santos, L.(2), & Gonçalves , A.P.(1).
(1) C2TN, DECN, Instituto Superior Técnico, Univ. Lisboa, Campus Tecnológico e Nuclear (2) CQE, Instituto Superior Técnico, Univ. Lisboa, Portugal

**10:00** **Strong renormalization of Ba vibrations in thermoelectric type IX clathrate Ba24Ge100** — G TH.4
R. Viennois *, M. Beaudhuin *, M. M. Koza
#* ICGM, Univ Montpellier, CNRS, ENSCM, Montpellier, France # Institut Laue Langevin, 71 Avenue des Martyrs, CS 20156, F-38042 Grenoble, France

**10:15** **ELECTRICAL CONTACTS CHARACTERIZATION OF TETRAHEDRITE BASED DEVICES** — G TH.5
Rodrigo Coelho*(1), Yassine De Abreu (2), Francisco Carvalho (3) , Elsa Branco Lopes (1), António Pereira Gonçalves (1),
(1) C2TN, DECN, Instituto Superior Técnico, Universidade de Lisboa, Campus Tecnológico e Nuclear, 2695-066 Bobadela LRS, Portugal, (2) CESI, Campus d'enseignement supérieur et de formation professionnelle, 15C Av. Albert Einstein, 69100 Villeurbanne, France (3) DEEC, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal

**10:30** **Discussion Thermoelectrics I.I**

**10:45** **Violating translational symmetry in thermoelectric materials** — G TH.6
Yuri Grin
Max-Planck-Institut für Chemische Physik fester Stoffe

**11:00** **Seebeck coefficient of porous Silicon and graphenized porous Silicon** — G TH.7
S. Nar1-2*, A. Stolz1, D. Machon2, A. Boucherif2, N. Semmar1
1. GREMI, UMR 7344, Université d'Orléans, CNRS, Orléans, France 2. Laboratoire Nanotechnologies Nanosystèmes (LN2) - CNRS UMI-3463, Institut Interdisciplinaire d'Innovation Technologique (3IT), Université de Sherbrooke, Canada Corresponding author's E-mails: *sibel.nar@univ-orleans.fr and sibel.nar@usherbrooke.ca

**11:15** **High Power Density Thermoelectric Generators with Skutterudites** — G TH.8
Soufiane El Oualid1, Iurii Kogut1, Mohamed Benyahia3, Eugen Geczi2, Uwe Kruck2,†, Francis Kosior1, Philippe Masschelein1, Christophe Candolfi1, Anne Dauscher1, Jan Dieter Koenig2, Alexandre Jacquot2, Thierry Caillat4, Eric Alleno3, Bertrand Lenoir1,
1 Institut Jean Lamour, UMR 7198 CNRS – Université de Lorraine, Campus ARTEM, 2 allée André Guinier, BP 50840, 54011 Nancy, France 2 Fraunhofer Institute for Physical Measurement Techniques IPM, 79110 Freiburg, Germany 3 Univ Paris Est Creteil, CNRS, ICMPE, UMR 7182, 2 rue Henri Dunant, 94320 Thiais, France 4 Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA

**11:30** INV **Recent advances and progress in thermoelectric sulfides** — G TH.9
Emmanuel Guilmeau
Normandie Univ, ENSICAEN, UNICAEN, CNRS, CRISMAT, 14000 Caen, France



**12:00** **Discussion Thermoelectrics I.II**

**12:15** **Lunch and Plenary**

## Catalysis : Sebatien Fontana, Pierre Ruterana

**15:00** INV **Development of three-dimensional nitrogen-doped graphenic materials: towards PEMFC catalysts without platinum** — G C.1
Sébastien Fontana (1), Lilian Moumaneix(1, 2), Franvois Lapicque (2), Claire Hérold (1)
(1) IJL CNRS UMR 7198, Université de Lorraine, 2 allée André Guinier 54000 Nancy (2) LRGP CNRS UMR 7274, 1 rue Grandville 54001 Nancy

**15:30** **Evaluation of CO2 Absorption by a New Barium Nickel Oxycarbonate** — G C.2
D. Gutiérrez-Martín 1, M. Hernando 1, A. Torres-Pardo 1,2, J.M. González-Calbet 1,2, A. Varela 1 and M. Parras 1
1. Inorganic Chemistry Department, Universidad Complutense de Madrid, Spain, 2. ICTS National Center for Electronic Microscopy, Universidad Complutense de Madrid, Spain

**15:45** **Second harmonic generation (SHG) from semiconductors nanopowders: a polarization and an intensity profile studies** — G C.3
Faheem Ahmed (1), Mohammed Benali Kanoun (1), Christophe Moulin (1), Christian Jonin (2), Pierre-Francois Brevet (2), Chawki Awada*(1)
(1) Department of Physics, College of Science, King Faisal University, P.O. Box 400, Al-Ahsa 31982, Saudi Arabia (2) Institut Lumière Matière, Université de Lyon, UMR 5306 CNRS and Université Claude Bernard Lyon 1, France

**16:00** **Tailoring the morphology of cost-effective vanadium diboride through cobalt substitution for highly efficient alkaline water** — G C.4
Ebrahim Sadeghi1,2,*, Naeimeh Sadat Peighambardoust1, and Umut Aydemir1,3
1 Koç University Boron and Advanced Materials Application and Research Center (KUBAM), Sariyer, Istanbul, 34450, Turkey 2 Graduate School of Sciences and Engineering, Koç University, Sariyer, Istanbul, 34450, Turkey. 3 Department of Chemistry, Koç University, Sariyer, Istanbul, 34450, Turkey

**16:15** **Computational investigation of Fe-doped NiOOH electrocatalysts** — G C.5
Zheng-Da He, Rebekka Tesch, Mohammad J. Eslamibigoli, Michael Eikerling, Piotr Kowalski
Institute of Energy and Climate Research (IEK-13), Forschungszentrum Jülich, Wilhelm-Johnen-Straße, 52425 Jülich, Germany, Institute of Energy and Climate Research (IEK-13), Forschungszentrum Jülich, Wilhelm-Johnen-Straße, 52425 Jülich, Germany, Institute of Energy and Climate Research (IEK-13), Forschungszentrum Jülich, Wilhelm-Johnen-Straße, 52425 Jülich, Germany, Institute of Energy and Climate Research (IEK-13), Forschungszentrum Jülich, Wilhelm-Johnen-Straße, 52425 Jülich, Germany, Institute of Energy and Climate Research (IEK-13), Forschungszentrum Jülich, Wilhelm-Johnen-Straße, 52425 Jülich, Germany, Jülich Aachen Research Alliance, JARA Energy & Center for Simulation and Data Science (CSD), Jülich, Germany

**16:30** INV **Boosting heterogeneous catalyst discovery by structurally constrained Machine Learning models** — G C.6
Alexey Korovin, Innokentiy Humonen, Artem Samtsevich, Roman Eremin, Artem Vasilyev, Vladimir Lazarev, Semeon Budennyy
AIRI, Moscow, Russia

**17:00** **Discussion Catalysis**

## Wednesday june 1

### Fuel Cells : Adam Lee, Jianbing Huang

**09:00** INV **Ultrafine and Highly Dispersed PtRu Alloy on Polyacrylic Acid Grafted Carbon Nanotube@Tin Oxide Core/shell Composite for Direct** — **G PH.1**
Yaqin Sang, Renyan Zhang, Jian Yang, Chunyan Zhao, and Hui Xu*
Institute of Advanced Synthesis, School of Chemistry and Molecular Engineering, Nanjing Tech University, Nanjing 211816, China.

**09:30** **Goal oriented materials optimisation using deep reinforcement learning** — **G PH.2**
Felix Bennemann
Prof. Nicholas M Harrison, Imperial College London

**09:45** **Cubic silicon carbide/zinc oxide heterostructure fuel cells** — **G PH.3**
Yueming Xing, Enyi Hu, Faze Wang, Naveed Muhammad, Baoyuan Wang, Jun Wang, Ammara Maryam, Muhammad Naveed Rasheed, Muhammad Asghar, Chen Xia, Sining Yun, and Bin Zhu
Engineering Research Center of Nano-Geo Materials of Ministry of Education, Faculty of Materials Science and Chemistry, China University of Geosciences, No. 388 Lumo Road, Wuhan 430074, China

**10:00** **Standardized Procedures Important for Improving Low-Temperature Ceramic Fuel Cell Technology** — **G PH.4**
Xinlei Yang, Fan Yang, Bin Zhu, Jingjing Liu, Yifei Zhang, Wanli Sun
Jiangsu Provincial Key Laboratory of Solar Energy Science and Technology, School of Energy & Environment, Southeast University

**10:15** **Self-assembled SrCo0.8Fe0.2O3–δ/Fe3O4 heterostructure proton membrane for advanced semiconductor ionic fuel cell** — **G PH.5**
Nabeela Akbar1, Sara Paydar1, Wu Yan1, Bin Zhu1,2
1. Engineering Research Center of Nano-Geo Materials of Ministry of Education, Faculty of Materials Science and Chemistry, China University of Geosciences, 388 Lumo Road, Wuhan 430074, China 2. Jiangsu Provincial Key Laboratory of Solar Energy Science and Technology/ Energy Storage Joint Research Center, School of Energy and Environment, Southeast University, No.2 Si Pai Lou, Nanjing 210096, China.

**10:30** **Discussion Fuel Cells I**

**11:00** **Tailoring transition metal elements to improve the stability of the semiconductor membrane fuel cell** — **G FC.7**
Sun Wanli, Yang Fan, Zhu Bin, Liu Jingjing, Zhang Yifei, Yang Xinlei
Jiangsu Provincial Key Laboratory of Solar Energy Science and Technology
School of Energy & Environment Southeast University

**11:15** **Surface-Engineered Homostructure for Enhancing Proton Transport** — **G FC.8**
Enyi Hu1, Faze Wang1, Jun Wang1, Bin Zhu1, Peter Lund2
1Jiangsu Provincial Key Laboratory of Solar Energy Science and Technology, School of Energy & Environment, Southeast University, Nanjing, 210096, China.
2Department of Engineering Physics/Advanced Energy Systems, School of Science, Aalto University, 00076 Aalto, Espoo, Finland.



**11:30** **WO3-LSCF composite electrolyte with high ionic conductivity for low temperature solid oxide fuel cell** — **G FC.9**
Xiaoqian Jin , Wenjing Dong , Chen Xia , Baoyuan Wang , Xunying Wang
Hydrogen, as a secondary energy, can be produced by electrolyzing water using surplus renewable energy (eg. solar or wind energy), and its combustion product is only water. Solid oxide fuel cell (SOFC) can transform hydrogen into electricity efficiently. What's more, compared with proton exchange membrane fuel cell, SOFC possesses the advantage of needless of precious metal catalyst and low requirement for hydrogen purity. However, high work temperature limits its commercialization. Increase ionic conductivity of electrolyte can effectively decrease the SOFC work temperature. Recently, constructing heterointerface has been an emerging approach for increasing electrolyte materials conductivity. [1-6]. The most typical example is YSZ-SrTiO3 (STO) 2D heterostructure which was reported by Garcia Barriocanal et al [1, 2]. The O2- conductivity of heterointerface between YSZ film and SrTiO3 film was nearly 8 orders of magnitude enhancement than that of bulk YSZ. Besides, other 2D heterostructure materials (eg. YSZ-MgO and Ce0.8Sm0.2O2-δ-Al2O3) also showed excellent ionic conductivity [3, 4]. Recently, 3D heterostructure materials were constructed extensively, and they displayed enhanced ionic conductivity compared with pure phase material under low temperature. The O2- conductivity of SrTiO3 semiconductor was enhanced about 5 orders of magnitude by being covered with an amorphous core-shell heterostructure [5]. Large number of oxygen vacancies were detected in the shell layer, which was considered as the main reason for the excellent O2- conductivity. CeO2/CeO2–δ core-shell heterostructure electrolyte exhibited the proton conductivity of 0.16 S cm-1 under 520 °C [6]. It was considered that oxygen vacancies and charged layers at the interface mainly contributed to the excellent proton conductivity. Recently, we constructed 3D YSZ-LaNiO3 heterostructure electrolyte, and the power density of corresponding SOFC achieved 1045 mW cm-2 at 600 °C [7]. Study results indicated that the heterointerface between YSZ and LaNiO3 provided a large number of oxygen vacancies which are beneficial to enhance O2- conductivity. It has been reported that constructing built-in electric field can effectively prevent electrons transport across electrolyte and accelerate ion conduction. Here we adopted n-type WO3 and p-type LSCF to constructing p-n heterojunction and studied the effect of heterostructure on the SOFC performance.

**11:45** **How ternary Li-oxide coatings affect the interfacial dynamics between LiCoO2 and Li7La3Zr2O12 in thin-film solid-state cells** — **G FC.10**
André Müller, Abdessalem Aribia, Moritz H. Futscher, and Yaroslav E. Romanyuk
Laboratory for Thin Films and Photovoltaics Empa-Swiss Federal Laboratories for Materials Science and Technology, Überlandstrasse 129, Dübendorf CH-8600, Switzerland

**12:00** INV **Low temperature ceramic fuel cell with NASICON Na5YSi4O12 and semiconductor Ni0.8Co0.15Al0.05LiO2 composite electrolyte** — **G FC.11**
Yong Yu1, Jianbing Huang1,*, Bin Zhu1,2,*
1.State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University, Xi'an 710049, Shaanxi, China, 2.Jiangsu Provincial Key Laboratory of Solar Energy Science and Technology/Energy Storage Joint Research Center, School of Energy & Environment, Southeast University, Nanjing 210096, Jiangsu, China

**12:30** **Discussion Fuel Cells II**

**12:45** **Lunch and Plenary**

### Photovoltaics : Pierre Ruterana, Song Yi Park

**15:00** INV **Organic bilayer-heterojunctions for efficient indoor photovoltaic applications** — **G PH.1**
Song Yi Park, Chiara Labanti, Joel Luke, Yi-Chun Chin, Ji-Seon Kim
Imperial College London

**15:30** **Investigation of Electronic Properties of Grains and Grain Boundaries of CsPbBr3 Halide Perovskite Thin Films** — **G PH.2**
Chandra Shakher Pathak and Eran Edri
Department of Chemical Engineering and Ilse Katz Institute for Nano-scale Science and Technology, Ben-Gurion University of the Negev, Israel

**15:45** **Effect of microstructure on hydrogenation pathways illustrated by correlative high-resolution SIMS, TEM, and optical microscopy** — **G PH.3**
Andersen, D.* (1), Chen, H. (2), Cressa, L. (1), Wirtz, T. (1), Schmitz, G. (2), & Eswara, S. (1)
(1) Advanced Instrumentation for Nano-Analytics (AINA), Materials Research and Technology Department, Luxembourg Institute of Science and Technology (LIST), Luxembourg, (2) Institute for Materials Science (IMW), Department for Materials Physics, University of Stuttgart, Germany * lead presenter

**16:00** **Asymmetrical supercapacitor based on WO3 nanorods grown by one-step hydrothermal synthesis** **G PH.4**
G. Mineo1-2, M. Scuderi3, S. Mirabella1-2, E. Bruno1-2
1 Dipartimento di Fisica e Astronomia "Ettore Majorana", Università degli Studi di Catania, via S. Sofia 64, 95123 Catania, Italy, 2 CNR-IMM (Università di Catania), via S. Sofia 64, 95123 Catania, Italy, 3 IMM-CNR, VIII strada 5, 95121 Catania, Italy,

**16:15** **Contribution of ion beam analysis in multilayer Si1-xCx:H/W solar selective absorber materials characterization** **G PH.5**
Babacar DIALLO 1, Aïssatou DIOP 2,4, Danielle NGOUE 2,3, Aurélien BELLAMY 1, Olivier WENDLING 1, Paul SIGOT 1, Sebastien. QUOIZOLA 2, Antoine GOULLET 5, Audrey SOUM-GLAUDE 2, Eric TOMASELLA 4, Laurent THOMAS 2,3, Thierry SAUVAGE 1
1 CEMHTI (Conditions Extrêmes et Matériaux), Orléans, France 2 PROMES-CNRS (Laboratory of PROcess, Materials, Solar Energy) -Perpignan/Font-Romeu- Odeillo-Via, France 3 Université de Perpignan, Perpignan, France 4 ICCF (Institut de Chimie de Clermont-Ferrand), Aubière, France 5 IMN (Institut des Matériaux Jean Rouxel), Nantes, France

**16:30** **Photoelectron Spectroscopy provides insights in perovskite solar cells from single layers to buried interfaces of a full device** **G PH.6**
Maheu, C.* (1), Hellmann, T. (1), Baretzky, C. (2), Sirtl, M. T. (3), Bein, T. (3), Würfel, U. (2), Mayer, T. (1), Hofmann, J. P. (1).
(1) Surface Science Laboratory, Department of Materials and Earth Sciences, Technical University of Darmstadt, 64287 Darmstadt, Germany (2) Freiburg Materials Research Center (FMF), University of Freiburg, Stefan-Meier-Str. 21, 79104, Freiburg, Germany (3) Department of Chemistry and Center for NanoScience (CeNS), University of Munich (LMU), Butenandtstr. 11, 81377 Munich, Germany * lead presenter

**16:45** INV **Zr-doped Indium Oxide as transparent electrodes for photovoltaics** **G PH.7**
Melanie Micali (1,2), Marco Leonardi (1,3), Salvatore Lombardo (3), Giuseppe Bengasi (4), Claudio Colletti (4), Virginia Boldrini (5), Esther Alarcón Lladó (6), Antonio Terrasi (1,2)
1) Dipartimento di Fisica, Università di Catania, via S. Sofia 64, I-95123, Catania, Italy , 2) IMM-CNR, Sede Catania (Università), via S. Sofia 64, 95123 Catania, Italy, 3) Istituto per la Microelettronica e Microsistemi- Consiglio Nazionale delle Ricerche, Zona Industriale, Ottava Strada n.5, 95121 Catania, Italy, 4) ENEL Green Power, Contrada Blocco Torrazze sn- Z.I., 95121 Catania, Italy, 5) CNR-IMM Bologna via Gobetti 101, 40129 Bologna (Italy) , 6) AMOLF physics of functional matter, Science Park 104, NL1098XG, Amsterdam, The Netherland,

**17:15** **Discussion Photovoltaics**

**18:00** **E-MRS EU-40 Materials Prize & MRS Mid-Career Researcher Award Presentations**



**Thursday june 2**

## Batteries I : Adam Lee, Guanjie He

**09:00** INV **Cathode materials for Zn-ion batteries** **G B1.1**
Guanjie He
School of Engineering and Materials Science, Queen Mary University of London

**09:30** **Hydroxysulfates as cathode materials for rechargeable batteries** **G B1.2**
Shashwat Singh1*, Valérie Pralong2, and Prabeer Barpanda1
1. Faraday Materials Laboratory, Materials Research Centre, Indian Institute of Science, Bangalore – 560012, India 2. Normandie University, Ensicaen, Unicaen, CNRS, Crismat, 14000 Caen, France

**09:45** **Electronic Self-Passivating Behavior of Li-LIPON Solid-Electrolyte Interphases from Defect Calculations** **G B1.3**
Yuheng Li, Pieremanuele Canepa, Prashun Gorai
National University of Singapore, National University of Singapore, Colorado School of Mines

**10:00** **A 3-D tunnel type Intercalation Cathode Material for Lithium-Ion Battery** **G B1.4**
Sai Pranav Vanam*, Prabeer Barpanda
Faraday Materials Laboratory, Materials Research Centre, Indian Institute of Science, Bangalore- 560012, India

**10:15** **Conductor:Insulator Interfaces – Conductivity Enhancement in LiBH4:Oxide Nanocomposites** **G B1.5**
Thomas Scheiber, H. Martin R. Wilkening
Institute of Chemistry and Technology of Materials, Graz University of Technology (NAWI Graz), Stremayrgasse 9, 8010 Graz, Austria

**10:30** **Discussion Batteries I.I**

**10:45** **Anionic redox activity in lithium metal bisulfate cathodes: A first-principles investigation** **G B1.6**
Pawan Kumar Jha(1)*, Shashwat Singh(1), Mayank Srivastava(1), Prabeer Barpanda(1), Gopalakrishnan Sai Gautam(1).
1. Indian Institute of Science, Bangalore 560012, India

**11:00** **Lithiated Mn and Fe based nitrides as competitive negative materials for Li-ion battery** **G B1.7**
Y. Zhou, N. Emery, J.P. Pereira-Ramos, O. Nguyen, R. Baddour-Hadjean
Institut de Chimie et des Matériaux Paris Est (ICMPE), UMR 7182 CNRS-Université Paris-Est, Technocentre Renault, Institut de Chimie et des Matériaux Paris Est (ICMPE), UMR 7182 CNRS-Université Paris-Est, Institut de Chimie et des Matériaux Paris Est (ICMPE), UMR 7182 CNRS-Université Paris-Est, Technocentre Renault, Institut de Chimie et des Matériaux Paris Est (ICMPE), UMR 7182 CNRS-Université Paris-Est

**11:15** **The impact of coating material on advanced SnO2 nanowire-based lithium-ion battery anodes** **G B1.8**
Jasmin-Clara Bürger [1], Serin Lee [2], Sebastian Gutsch [1], Frances M. Ross [2], Margit Zacharias [1]
[1] Laboratory for Nanotechnology, Department of Microsystems Engineering (IMTEK), University of Freiburg, Georges-Koehler-Allee 103, 79110 Freiburg, Germany, [2] Department of Materials Science and Engineering, Massachusetts Institute of Technology (MIT), 77 Massachusetts Avenue, Cambridge, MA 02139, USA

**11:30** INV **Exploration of Li-P/B-S-O/Cl system for discovery of new solid electrolyte** **G B1.9**
Audric Neveu1, Vincent Pelé3, Christian Jordy3 and Valerie Pralong1,2*
1-Normandie Univ, Ensicaen, Unicaen, CNRS, Crismat, 14000 Caen, France
2-Réseau sur le Stockage Electrochimique de l'Energie (RS2E), FR CNRS 3459, France 3-SAFT, 111-113 Bd Alfred Daney 33074 Bordeaux, France

**12:00** **Discussion Batteries I.II**

**12:15** **Lunch and Plenary**

## Batteries II : Valerie Pralong, Arumugam Manthiram

**15:00** INV **Spray-Drying Synthesis of Na2+2xFe2-x(SO4)3: Electrochemistry, Thermodynamic stability and humidity induced phase transition** — G B2.1
Pubali Barman* (1), Debasmita Dwibedi (1,2), K Jayanti (3), Sher Singh Meena (4), Supreeth Nagendran (5,6), Alexandra Navrotsky (3), & Prabeer Barpanda (1)
(1) Indian Institute of Science, India, (2) The University of Tokyo, Japan, (3) Arizona State University, United State, (4) Bhabha Atomic Research Centre, India, (5) Bangalore University, India, (6) University of Cambridge, United Kingdom

**15:30** **Structure-Phase Transformations in LiF Crystals Initiated by Nuclear Reactions** — G B2.2
Ibragimova E.M., Buzrikov Sh.N., Iskandarov N.E., Mussaeva M.A., Nazarov Kh.T.
Ibragimova E.M.1,2, Buzrikov Sh.N.1, Iskandarov N.E.2, Mussaeva M.A.1, Nazarov Kh.T.2. 1 Institute of nuclear physics, Academy of sciences, Tashkent, Uzbekistan, 2 Center for advanced technologies, Ministry of innovative development, Tashkent, Uzbekistan

**15:45** **The batteries' new clothes - Li and H dynamics in Li2OHCl as seen by spin-lattice relaxation NMR** — G B2.3
Jonas Spychala,* H. Martin R. Wilkening
Institute for Chemistry and Technology of Materials, Graz University of Technology (NAWIGraz), Stremayrgasse 9, 8010 Graz, Austria

**16:00** **Regulating anode self-discharge for boosting energy density of aqueous Mg batteries** — G B2.4
Min Deng, Linqian Wang, Bahram Vaghefinazari, Darya Snihirova, Sviatlana V. Lamaka, Daniel Höche, Mikhail L. Zheludkevich
Institute of Surface Science, Helmholtz-Zentrum Hereon, 21502 Geesthacht, Germany, Institute of Materials Science, Faculty of Engineering, Kiel University, 24143 Kiel, Germany.

**16:15** **How K metal governs electrochemical performance and SEI formation in half-cells** — G B2.5
Caracciolo, L.(1), Gachot, G.(2,3), Touja, J.(3,4), Stievano, L.(3,4), Monconduit, L.(3,4), Martinez, H.(1,3), Madec, L.*(1,3)
(1) Universite de Pau et des Pays de l'Adour, E2S UPPA, CNRS, IPREM, Pau, France, (2) LRCS, Université de Picardie Jules Verne, 80039 Amiens, France, (3) Réseau sur le Stockage Electrochimique de l'Energie, CNRS FR3459, Amiens, France, (4) ICGM, Université de Montpellier, CNRS, Montpellier, France

**16:30** **Discussion Battery II**

**Friday june 3**

## Batteries III : Adam Lee, Yuping Wu

**09:00** INV **The Detrimental Impact of Local Disorder on Ion Transport: Case Study on Nanocrystalline and Amorphous Li10GeP2S12** — G B3.1
Katharina Hogrefe1*, Lukas Schweiger,1 Bernhard Gadermaier1, Jennifer L. M. Rupp2,3, and H. Martin R. Wilkening1
1 Institute for Chemistry and Technology of Materials, Christian Doppler Laboratory for Lithium Batteries, Graz University of Technology (NAWI Graz), 8010 Graz, Austria, 2 Electrochemical Materials, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, USA, 3 Electrochemical Materials, Department of Electrical Engineering & Computer Science, Massachusetts Institute of Technology, Cambridge, MA 02139, USA

**09:30** **To tame polysulfides shuttling by modification of separators with three-dimensional interconnected graphene-like carbon and ruti** — G B3.2
Shuang Xia, Yusong Zhu, Lijun Fu, Yuping Wu
nanjing tech university

**09:45** **Rational design of organic redox-active materials for high-capacity and high-rate potassium-ion batteries** — G B3.3
Pavel A. Troshin
(1) Faculty of Chemistry, Silesian University of Technology, Strzody 9, 44-100 Gliwice, Poland (2) Institute for Problems of Chemical Physics of RAS, Acad. Semenov str.1, Chernogolovka 142432 Russia.



**10:00** **Analysis of Si surface/polymers interface for self-healed next generation Lithium ion batteries** — G B3.4
a. Rita Maji b. Michele Aparecida Salvador c. Elena Degoli d. Alice Ruini e. Rita Magri
a. Dipartimento di Scienze e Metodi dell'Ingegneria, Università di Modena e Reggio Emilia, Via Amendola 2 Padiglione Tamburini, I-42122 Reggio Emilia, Italy b. Dipartimento di Scienze Fisiche, Informatiche e Matematiche sede ex-Fisica, Università di Modena e Reggio Emilia,Via Campi 213/A, 41125 Modena c. Dipartimento di Scienze e Metodi dell'Ingegneria, Università di Modena e Reggio Emilia, Via Amendola 2 Padiglione Morselli, I-42122 Reggio Emilia, Italy Centro Interdipartimentale En&Tech, Via Amendola 2 Padiglione Morselli, I-42122 Reggio Emilia, Italy Centro S3, Istituto Nanoscienze-Consiglio Nazionale delle Ricerche (CNR-NANO), Via Campi 213/A, 41125 Modena, Italy d. Dipartimento di Scienze Fisiche, Informatiche e Matematiche sede ex-Fisica, Università di Modena e Reggio Emilia,Via Campi 213/A, 41125 Modena e. Dipartimento di Scienze Fisiche, Informatiche e Matematiche sede ex-Fisica, Università di Modena e Reggio Emilia,Via Campi 213/A, 41125 Modena

**10:15** **Study the high voltage performance of Li-ion conducting Li3PO4 coated NMC811 cathode material for rechargeable Li polymer batter** — G B3.5
Himani Gupta
Faraday Materials Laboratory, Materials Research Centre, Indian Institute of Scien ce Bangalore-560012, India

**10:30** **Discussion Battery III.I**

**10:45** **High-Entropy Disordered Rock-Salt: Tailoring the Potential Window of Electrodes for Li-Ion Batteries** — G B3.6
Qingsong Wang, Ben Breitung, Horst Hahn, Robert Kruk, Abhishek Sarkar
Chair of Inorganic Active Materials for Electrochemical Energy Storage, University of Bayreuth, Universitaetsstr. 30, 95447 Bayreuth, Germany Bavarian Center for Battery Technology (BayBatt), Universitaetsstr. 30, 95447 Bayreuth, Germany Institute of Nanotechnology, Karlsruhe Institute of Technology, 76344 Eggenstein-Leopoldshafen, Germany Joint Research Laboratory Nanomaterials – Technische Universität Darmstadt and Karlsruhe Institute of Technology, 64287 Darmstadt, Germany

**11:00** **Bio-based poly(hydroxyurethanes) networks as polymer electrolyte for solid-sate lithium batteries** — G B3.7
Ashish Raj, Dr. Satyannarayana Panchireddy, Dr. Bruno Grignard, Dr. Christophe Detrembleur, Prof. Jean-Francois Gohy
Institute of Condensed Matter and Nanoscience (IMCN), UCLouvain, Place L. Pasteur 1, 1348 Louvain-la-Neuve, Belgium., Center for Education and Research on Macromolecules (CERM), CESAM Research Unit, University of Liège, allée du 6 août, Building B6A, Agora Square, 4000 Liège, Belgium

**11:15** **Tip-Enhanced Raman Spectroscopy of inorganic compounds in energy devices: a versatile approach for nanometric chemical insights** — G B3.8
Juan Carlos Gonzalez-Rosillo, Patrick Hsia, Marc Chaigneau, Alex Morata, Albert Tarancón
Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, Planta 2, 08930, Sant Adrià del Besòs, Barcelona, Spain , HORIBAFrance , Palaiseau, France, HORIBAFrance , Palaiseau, France, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, Planta 2, 08930, Sant Adrià del Besòs, Barcelona, Spain, Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, Planta 2, 08930, Sant Adrià del Besòs, Barcelona, Spain

**11:30** INV **Optimized electrode formulation for enhanced performance of graphite in K-ion batteries.** — G B3.9
Badre Larhrib (a), Lénaïc Madec (a,c), Laure Monconduit (b,c), Hervé Martinez (a,c)
a Université de Pau et des Pays de l'Adour, E2S UPPA, CNRS, IPREM, Pau, France b ICGM, Université de Montpellier, CNRS, Montpellier (France) c Réseau sur le Stockage Electrochimique de l'Energie, CNRS FR3459, Amiens, France

**12:00** **Discussion Battery III.I and Closing , Symposium Chairs**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM H

## 2D materials for energy storage: batteries, super capacitor, solar cells, thermoelectric

*Symposium Organizers :*

Manickam MINAKSHI, Murdoch University

Priya VASHISHTA, University of Southern California

Rajeev AHUJA (Main Organizer), Department of Physics and Astronomy, Uppsala University

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**Monday may 30**

**08:45** **WELCOME AND INTRODUCTION TO THE SYMPOSIUM**

**-I : RAJEEV AHUJA**

**09:00** **Large-Scale Thermal Property Simulations of 2D Materials using Machine Learning Force Fields** — **H 1.1**
Natarajan, S. K. (1), Luy, J.-.N. (1), Schneider, J. (1), Arcisauskaite, V. (1) & Martinez, U.* (1).
(1) Synopsys QuantumATK, Fruebjergvej 3, 2100 Copenhagen, Denmark * lead presenter

**09:15** **Polycrystalline silicon substrate thickness effect on solar cells performances** — **H 1.2**
Mohamed BEN RABHA
LaNSER, CRTEn

**09:30** **Emergence of metallic states at 2D MoSSe/GaAs Janus interface** — **H 1.3**
Arwa Albar 1, S Assa Aravindh 2*
1 Physics Department, Faculty of Science, University of Jeddah, PO Box 80327, Jeddah 21589, Saudi Arabia 2 Nano and Molecular Systems Research Unit, University of Oulu, Pentti Kaiteran katu 1, Oulu 90570,Finland

**09:45** **Li-ion diffusion on the surface of Ti3C2–T (T = O, S, Se, F, Cl, Br) MXene** — **H 1.4**
Konstantina A. Papadopoulou(1), David Parfitt(1), Alexander Chroneos(2,3), and Stavros-Richard G. Christopoulos(1)
(1)Faculty of Engineering, Environment and Computing, Coventry University, Priory Street, Coventry CV1 5FB, United Kingdom (2)Department of Materials, Imperial College London, London SW7 2BP, United Kingdom (3)Department of Electrical and Computer Engineering, University of Thessaly, 38221 Volos, Greece

**10:00** **Identifying the best suitable medium for long duration storage of Ti2CTx MXene** — **H 1.5**
Chiranjit Roy, Somnath Bhattacharyya
Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras, Chennai 600036

**10:15** **Formation photocatalytic O-doped carbon nitride nanosheets on anatase nanopowdered matrix as hydrogen energy material** — **H 1.6**
M. Bondarenko, P. Silenko, Yu. Solonin, A. Ragulya, N. Gubareni, M. Zahornyi, O. Khyzhun, N. Yarova
Frantsevich Institute for Problems of Materials Science of NASU, Krzhyzhanovsky St. 3, 03142 Kiev, Ukraine

**10:30** **DISCUSSION**

**10:45**

**11:00** **Organic molecules meets transition metal dichalcogenides for solar energy conversion** — **H 1.7**
Juliana M. Morbec
School of Chemical and Physical Sciences, Keele University, UK

**11:15** **A potential approach to grow van der Waals heterostructures based on pulsed laser deposition of solid oxide precursors for thin** — **H 1.8**
Denys I. Miakota1, Ganesh Ghimire1, Rajesh Ulaganathan1, Raymond R. Unocic2, Sara Engberg1, Fabian Bertoldo3, David Geohegan2, Kristian S. Thygesen3, and Stela Canulescu1
1 Department of Photonics Engineering, Technical University of Denmark, DK-4000 Roskilde, Denmark 2 Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831, United States, 3 CAMD and Center for Nanostructured Graphene (CNG), Department of Physics, Technical University of Denmark, 2800 Kgs. Lyngby, Denmark

**11:30** **Time Dependent Exfoliation of Bulk MoS2 for Electrochemical Studies - Ranging from Supercapacitors to Na ion Batteries** — **H 1.9**
Surbhi Priya, Debabrata Mandal, Trilok Singh, Amreesh Chandra
Research Scholar, Research Scholar, Professor, Professor

**11:45** **Roll-to-roll deposition of 2D TMD nanoflake films for large area solar energy conversion** — **H 1.10**
Rebekah A. Wells, Charles R. Lhermitte, Marina C. Caretti, Kevin Sivula
Ecole Polytechnique Federal de Lausanne (LIMNO), Los Alamos National Laboratory, EPFL (LIMNO), EPFL (LIMNO)

**12:00** **DISCUSSION**



**12:15** **LUNCH**

**-II : RAJEEV AHUJA**

**13:45** **Graphene-covered substrates for the growth of releasable GaAs thin films: towards substrate reuse in III-V photovoltaics** — **H 2.1**
Carlos Macías 1,2 , Antonella Cavanna 2 , Ali Madouri 2 , Laurent Travers 2, Jean-Christophe Harmand 2, Stéphane Collin 1,2 , Andrea Cattoni 1,2 , Amaury Delamarre 1,2.
1 Institut Photovoltaïque d'Île-de-France (IPVF), 18 Bd Thomas Gobert, 91120 Palaiseau, France. 2 Centre de Nanosciences et de Nanotechnologies (C2N), CNRS, Université Paris-Saclay, 10 Bd Thomas Gobert, 91120 Palaiseau, France.

**14:00** **Electrochemistry of single layer MXene pseudocapacitance at nanoscale** — **H 2.2**
Marc Brunet Cabre (1), Dahnan Spurling (2), Pietro Martinuz (3), Valeria Nicolosi (2), Paula E. Colavita (1), Kim McKelvey (1)(4)
(1) School of Chemistry, Trinity College Dublin, Dublin 2, Ireland. , (2) School of Physics, Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN) and Advanced Materials and Bioengineering Research (AMBER), Trinity College Dublin, Dublin, Ireland , (3) Dipartimento di Chimica, Università degli Studi di Milano, Milan, Italy , 4 MacDiarmid Institute for Advanced Materials and Nanotechnology, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington 6012, New Zealand.

**14:15** **Major Energy Storage Enhancement in Workfunction Engineered ZrO2 Supercapacitors** — **H 2.3**
Patrick D. Lomenzo, Thomas Mikolajick, Uwe Schroeder
Patrick D. Lomenzo Nanoelectronic Materials Laboratory (NaMLab) gGmbH, 01187 Dresden, Germany, Thomas Mikolajick Nanoelectronic Materials Laboratory (NaMLab) gGmbH, 01187 Dresden, Germany Chair of Nanoelectronic Materials, TU Dresden, 01187 Dresden, Germany, Uwe Schroeder Nanoelectronic Materials Laboratory (NaMLab) gGmbH, 01187 Dresden, Germany,

**14:30** **Room temperature magnetic anisotropy of CrSBr two-dimensional ferromagnetic semiconductor investigated by electron spin resonan** — **H 2.4**
Fabrizio Moro, Xue Liu, Andrés Granados del Águila and Marco Fanciulli
Fabrizio Moro and Marco Fanciulli Department of Materials Science, University of Milano-Bicocca, Milano 20125, Italy, Xue Liu Information Materials and Intelligent Sensing Laboratory of Anhui Province, Institutes of Physical Science and Information Technology, Anhui University, Hefei 230601, China, Andrés Granados del Águila Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore.

**14:45** **SYNTHESIS AND CHARACTERIZATION OF 2D LAYERD PHOSPHONIUM BASED LEAD HALIDE PEROVSKITE MATERIAL** — **H 2.5**
Subrat Rout, Prabhanjan Pradhan and Biplab K. Patra*(corresponding author)
Email-subrat.r@immt.res.in Email-bkpatra@immt.res.in (corresponding author)
Materials Chemistry Department, CSIR-Institute of Minerals and Materials Technology, Bhubaneswar, 751013, India

**15:00** **Low-cost and high throughput synthesis of ZnO nanostars for Energy Storage applications.** — **H 2.6**
G. Di Mari (1,2), G. Mineo (1,2), G. Malandrino (3), G. Franzò (2), S. Mirabella (1,2), E. Bruno (1,2)
(1) Dipartimento di Fisica e Astronomia "E. Majorana", Università degli Studi di Catania, Via S. Sofia 64, I-95123, Catania, Italy, (2) CNR-IMM, Via S. Sofia 64, I-95123, Catania, Italy, (3) Dipartimento di Scienze Chimiche, Università degli Studi di Catania, INSTM UdR Catania, Viale A. Doria 6, I-95125, Catania, Italy

**15:15** **Investigation of macro and nano-sized NASICON Mg0.5Ti2(PO4)3 as potential electrode materials for Mg-ion batteries** — **H 2.7**
Martina Romio, Yuri Surace, Damian M. Cupid
Battery Technologies, Center for Low-emission transport, AIT Austrian Institute of Technology GmbH Giefinggasse 4, 1210 Vienna, Austria

**15:30** **Ultrathin printable transistors from an optimized dielectrics inks** — **H 2.8**
Chengning Yao, Benji Fenech Salerno, Callon Peate, Felice Torrisi
Department of Chemistry-Molecular Sciences Research Hub-Imperial College London, Department of Chemistry-Molecular Sciences Research Hub-Imperial College London, Department of Chemistry-Molecular Sciences Research Hub-Imperial College London, Department of Chemistry-Molecular Sciences Research Hub-Imperial College London,

**15:45** **Optical anomalies in Large-Area MoS2 nanoripples boost Photobleaching of Dye Molecules** — **H 2.9**
Gardella, M.*(1), Ferrando, G. (1), Barelli, M. (1), Chowdhury, D. (1), Giordano, M.C. (1), Buatier de Mongeot, F. (1)
(1) Dip. di Fisica, Università di Genova, Via Dodecaneso 33, 16146 Genova, Italy

**16:00** **A tunable structural family with ultralow thermal conductivity: copper deficient Cu1-x□xPb1-xBi1+xS3** **H 2.10**

Krishnendu Maji,[a] Pierric Lemoine,[b]* Adèle Renaud,[b] Bin Zhang,[c,d] Xiaoyuan Zhou,[c,d] Virginia Carnevali,[e] Christophe Candolfi,[f] Bernard Raveau,[a], Rabih Al Rahal Al Orabi,[e] Marco Fornari,[e],* Paz Vaqueiro,[g] Mathieu Pasturel,[b] Carmelo Prestipino,[b] Emmanuel Guilmeau[a]*
[a] CRISMAT, CNRS, Normandie Univ, ENSICAEN, UNICAEN, 14000 Caen, France [b] Univ Rennes, ISCR – UMR 6226, CNRS, F-35000 Rennes, France [c] College of Physics and Institute of Advanced Interdisciplinary Studies, Chongqing University, Chongqing 401331, China [d] Analytical and Testing Center of Chongqing University, Chongqing 401331, China [e] Department of Physics and Science of Advanced Materials Program, Central Michigan University, Mt. Pleasant, MI 48859, USA [f] Institut Jean Lamour, UMR 7198 CNRS – Université de Lorraine, 2 allée André Guinier-Campus ARTEM, BP 50840, 54011 Nancy Cedex, France [g] Department of Chemistry, University of Reading, Whiteknights, Reading, RG6 6DX, United Kingdom

**16:15** **DISCUSSION**

**16:30**

## -I : RAJEEV AHUJA

**16:45** **Deep insights into kinetics and structural evolution of dimension-engineered TiNb2O7 anode for lithium storage** **H 3.1**

Wenlei Xu[1], Yaolin Xu[2], Veronika Grzimek[2], Thorsten Schultz[3], Yan Lu[2], Norbert Koch[3], Nicola Pinna[1]
[1] Institut für Chemie and IRIS Adlershof, Humboldt-Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany [2] Department of Electrochemical Energy Storage, Helmholtz-Zentrum Berlin für Materialien und Energie, 14109 Berlin, Germany [3] Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Albert-Einstein Str. 15, 12489 Berlin, Germany

**16:45** **Preparation of Piezoelectric PVDF-TrFE Thin Film for Wearable Electronics** **H 3.2**

Turdakyn, N.(1), Bekezhankyzy, Z.(1), Kim, A.(1), Adair, D.(1) & Kalimuldina, G.*(1).
(1) Nazarbayev University, Kazakhstan * lead presenter

**16:45** **Preparation of a flexible freestanding electrode based on PEDOT:PSS for Li-S batteries** **H 3.3**

Assyl Adylkhanova, Gulnur Kalimuldina*, Arailym Nurpeissova, Zhumabay Bakenov
Assyl Adylkhanova (Department of Chemical and Materials Engineering, School of Engineering and Digital Sciences, Nazarbayev University) Gulnur Kalimuldina* (Department of Mechanical and Aerospace Engineering, School of Engineering and Digital Sciences, Nazarbayev University) Arailym Nurpeissova (National Laboratory Astana, Nazarbayev University) Zhumabay Bakenov (Department of Chemical and Materials Engineering, School of Engineering and Digital Sciences, Nazarbayev University)

**16:45** **Effect of Direct Carbothermic Reduction-cum-Zinc doping on the Phase, Crystallinity, and Specific Capacitance of 1-D Iron/Carbon** **H 3.4**

Richard Appiah-Ntiamoah, Hern Kim
Myongji University, Department of Energy Science and Technology, Environmental Waste Recycle Institute, Republic of Korea

**16:45** **Binder-free Ti3C2TX/W18O49 Composite for flexible quasi-solid-state asymmetric supercapacitor** **H 3.5**

Shuang Liu1, Ting Zeng1, Qijin Wan1, and Nianjun Yang2
1 School of Chemistry and Environmental Engineering, Key Laboratory for Green Chemical Process of Ministry of Education, Hubei Key Lab of Novel Reactor and Green Chemical Technology, Wuhan Institute of Technology, Wuhan 430073, China. 2 Institute of Materials Engineering, University of Siegen, Siegen 57076, Germany

**16:45** **First-Principles Investigation of the Electronic Properties of 2-D Organic-TMDC Heterostructures*** **H 3.6**

E. Black, J. Morbec
School of Chemical and Physical Sciences, Keele University, UK

**16:45** **Facile Synthesis and Electrochemical studies of Graphene oxide as an Electrode material for Supercapacitor Application** **H 3.7**

Itum Ruti (1), Jyoti Jaiswal (2*),Sanjeev Kumar (3*)
1,2,3 -Centre of Advanced Research, Department of Physics, Rajiv Gandhi University, Arunachal Pradesh 791112, India



**16:45** **Optical properties of 2D PtSe2 investigated using spectroscopic ellipsometry** **H 3.8**

Nikolay Minev (1)*, Krastyo Buchkov (1,2), Rosen Todorov (1), Vladimira Videva (1,3), Mariya Stefanova (1), Hristosko Dikov (4), Deyan Dimov (1), Ivalina Avramova (5), Dimitre Dimitrov (1,2) and Vera Marinova (1)
1 Institute of Optical Materials and Technologies, Bulgarian Academy of Sciences, Sofia, Bulgaria 2 Institute of Solid State Physics, Bulgarian Academy of Sciences, Sofia, Bulgaria 3 Faculty of Chemistry and Pharmacy, Sofia University, 1164 Sofia, Bulgaria, 4 Central Laboratory of Solar Energy and New Energy Sources, Bulgarian Academy of Sciences, Sofia, Bulgaria 5 Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria

**16:45** **Thickness dependent optical properties of large-area continuous 2D WSe2 films** **H 3.9**

Irnik Dionisiev*, I.D.(1), Nikolay Minev, N.M.(1), Vladimira Videva, V.V.(1), Krastyo Buchkov, K.B.(1,2), Vera Marinova, V.M.(1), Hristosko Dikov, H.D.(3), Tsvetanka Babeva, T.B.(1), Velichka Strijkova, V.S.(1), Dimitre Dimitrov, D.D.(1,2)
(1) Institute of Optical Materials and Technologies, Bulgarian Academy of Sciences, Bulgaria, (2) Institute of Solid State Physics, Bulgarian Academy of Sciences, Bulgaria, (3) Central Laboratory of Solar Energy and New Energy Sources, Bulgarian Academy of Sciences, Bulgaria,

**16:45** **Hybrid electrochemical capacitors based on Transition Metal Dichalcogenides and mesoporous carbons** **H 3.10**

Masoud Foroutan Koudahi, Elżbieta Frąckowiak*
Poznan University of Technology, Institute of Chemistry and Technical Electrochemistry, Berdychowo 4, 60-965, Poznan, Poland

**16:45** **Phase structure of LCO thin film cathodes physical vapor deposited on Si** **H 3.11**

María J. Ramirez-Peral 1 2 3, Jesús Díaz-Sánchez 1, Arturo Galindo 3 4, I. Salazar-Beitia 4, H. van der Meulen 2 5, Miguel Crespillo 6, Carmen Morant 2 4, Enrique Vasco 3 and Celia Polop 1 2 7.
1 Departamento de Física de la Materia Condensada, Universidad Autónoma de Madrid, Spain, 2 Instituto Universitario de Ciencia de Materiales Nicolás Cabrera, Universidad Autónoma de Madrid, Spain, 3 Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Spain, 4 Departamento de Física Aplicada, Universidad Autónoma de Madrid, Madrid, Spain, 5 Departamento de Física de Materiales, Universidad Autónoma de Madrid, Spain, 6 Centro de Micro-Análisis de Materiales, Universidad Autónoma de Madrid, Madrid, Spain, 7 Condensed Matter Physics Center (IFIMAC), Universidad Autónoma de Madrid, Madrid, Spain,

**16:45** **Carbon/MoS2 composites modified with redox species as an electrode materials in supercapacitors** **H 3.12**

Maciej Tobis*(1), Elzbieta Frackowiak(1) * lead presenter
(1) Poznan University of Technology, Institute of Chemistry and Technical Electrochemistry, 60 – 965 Poznań, Berdychowo 4, Poland

**16:45** **Modelling the visibility of dichalcogenide nanolayers on diamond** **H 3.13**

Cuenca, J.A.*(1), Thomas, E.L.H.(1), Williams, O.A.(1), Singh, R.P.(2), Mandal, S.(1)
(1) School of Physics and Astronomy, Cardiff University, Cardiff CF24 3AA, Wales, UK (2) Department of Physics, Indian Institute of Science Education and Research Bhopal, Bhopal, 462066, India

**16:45** **Direct synthesis of the planar and vertical graphene on Si(100) for photovoltaic applications** **H 3.14**

Š. Meškinis, R. Gudaitis, Š. Jankauskas, A. Guobienė, M. Andrulevičius, A. Vasiliauskas
Institute of Materials Science of Kaunas University of Technology, K. Baršausko 59, Kaunas, Lithuania

**16:45** **Improved capacity performance on graphene-C3N4-MnO2 ternary structure supercapacitor electrode** **H 3.15**

Alexandru-Cosmin Obreja, Cosmin Romanițan, Vasilica Tucureanu, Gabriel Crăciun, Marius Stoian, Irina Bratoșin, Andrei Avram, Mircea Dragoman
National Institute for Research and Development in Microtechnologies (IMT – Bucharest), 126A Erou Iancu Nicolae Street, 077190, Bucharest, Romania

**Tuesday may 31**

## -IV : RAJEEV AHUJA

**09:00** INV **Relativistic effects in CoPt thin films: Giant magnetic anisotropy energy and impact of single atomic defects and vacancies** — H 4.1
Samy Brahimi, Samir Lounis
Laboratoire de Physique et Chimie Quantique, Université Mouloud Mammeri Tizi-Ouzou, B.P.No.17 RP, 15000 Tizi-Ouzou, Algeria, Peter Gruenberg Institut and Institute for Advanced Simulation, Forschungszentrum Juelich, 52425 Juelich & JARA, Germany

**09:30** **Vanadium Intercalated Cobalt Trimesic MOF Composite for Enhanced Solid-State Asymmetric Supercapacitor Storage** — H 4.2
Monojit Mondal, Dipak Kumar Goswami, Tarun Kanti Bhattacharyya
School of Nano Science and Technology, IIT Kharagpur, Kharagpur, INDIA-721302, Department of Physics, IIT Kharagpur, Kharagpur, INDIA-721302, Department of Electronics and Electrical Communication Engineering, IIT Kharagpur, Kharagpur, INDIA-721302

**09:45** **On the charge storage mechanism of solvent co-intercalation of TiS2 electrodes in sodium-ion batteries** — H 4.3
Guillermo A. Ferrero, Gustav Åvall, Youhyun Son, Knut Janßen, Katherine Mazzio and Philipp Adelhelm
Humboldt Universität zu Berlin, Institut für Chemie, Brook-Taylor-Str. 2, 12489 Berlin, Germany

**10:00** **Can tannic acid, a small molecule, replace the polymeric binders of silicon electrodes in lithium-ion batteries?** — H 4.4
Nassima KANA, Bernard Humbert, Thomas DEVIC and Bernard LESTRIEZ
Université de Nantes, CNRS, Institut des Matériaux Jean Rouxel, IMN, F-44000 Nantes, France

**10:15** **Towards the development of 2D MoS2/c-Si heterojunction photovoltaics.** — H 4.5
Bienlo Zerbo(1), Mircea Modreanu(2), Ian Povey (2), Antoine Létoublon(1), Alain Rolland(1), Laurent Pédesseau(1), Jacky Even(1), Bruno Lépine(3), Pascal Turban(3), Philippe Schieffer(3), Alain Moréac(3), Olivier Durand(1).
(1) Univ Rennes, INSA Rennes, CNRS, Institut FOTON - UMR 6082, F-35000 Rennes, France, (2) Tyndall National Institute, University College Cork, Lee Maltings, Dyke Parade, T12 R5CP Cork, Ireland, (3) Univ Rennes, CNRS, IPR (Institut de Physique de Rennes)-UMR 6251, Rennes, France.

**10:30** **DISCUSSION**

**10:45**

**11:00** **A tunable structural family with ultralow thermal conductivity: copper deficient Cu1-x□xPb1-xBi1+xS3** — H 4.6
Krishnendu Maji,[a] Pierric Lemoine,[b],* Adèle Renaud,[b] Bin Zhang,[c,d] Xiaoyuan Zhou,[c,d] Virginia Carnevali,[e] Christophe Candolfi,[f] Bernard Raveau,[a], Rabih Al Rahal Al Orabi,[e] Marco Fornari,[e],* Paz Vaqueiro,[g] Mathieu Pasturel,[b] Carmelo Prestipino,[b] Emmanuel Guilmeau[a],*
[a] CRISMAT, CNRS, Normandie Univ, ENSICAEN, UNICAEN, 14000 Caen, France [b] Univ Rennes, ISCR – UMR 6226, CNRS, F-35000 Rennes, France [c] College of Physics and Institute of Advanced Interdisciplinary Studies, Chongqing University, Chongqing 401331, China [d] Analytical and Testing Center of Chongqing University, Chongqing 401331, China [e] Department of Physics and Science of Advanced Materials Program, Central Michigan University, Mt. Pleasant, MI 48859, USA [f] Institut Jean Lamour, UMR 7198 CNRS – Université de Lorraine, 2 allée André Guinier-Campus ARTEM, BP 50840, 54011 Nancy Cedex, France [g] Department of Chemistry, University of Reading, Whiteknights, Reading, RG6 6DX, United Kingdom

**11:15** **Reduced Graphene-oxide – Poly(ionic liquid) electrodes for flexible high** — H 4.7
Guemiza, H.*, Pham-Truong, T.N., Vidal, F., Plesse, C., Aubert, P-H.
CY Cergy Paris Université, LPPI, F-95000 Cergy

**11:30** **Advanced in modeling the oxygen evolution reaction** — H 4.8
Maytal Caspary Toroker
Department of Materials Science and Engineering, Technion - Israel Institute of Technology, Haifa 3600003, Israel



**11:45** **Nanoengineering of a layered BiSbTe alloy to enhance its thermoelectric properties** — H 4.9
Amir Pakdel, Takao Mori
Department of Mechanical, Manufacturing & Biomedical Engineering, Trinity College Dublin, The University of Dublin, D02PN40 Dublin, IRELAND, National Institute for Materials Science (NIMS), 1-1 Namiki, Tsukuba, Ibaraki, 305-0044 JAPAN

**12:00** **DISCUSSION**

**12:15** **LUNCH AND PLENARY**

## -V : RAJEEV AHUJA

**15:00** **Thermoelectric power factor optimization in two-dimensional materials** — H 5.1
Zhen Li*, Patrizio Graziosi, and Neophytos Neophytou
School of Engineering, University of Warwick, Coventry, CV4 7AL, UK Consiglio Nazionale delle Ricerche ? Istituto per lo Studio dei Materiali Nanostrutturati, CNR ? ISMN, via Gobetti 101, 40129, Bologna, Italy

**15:15** **Investigation on the growth of CuCoO2 delafossite as a Hole Transparent Layer for high-performance perovskite solar cells** — H 5.2
Hasnae Chfii, Amal Bouich, Lahoucine Atourki, Bérnabe Mari, Mohamed Abdlefdil, Laboratory MANAPSE, University Mohammed V, Rabat, Morocco Institut de Disseny i Fabricació, Universitat Politècnica,València, Spain

**15:30** **Electric and thermoelectric properties of supported 2D materials** — H 5.3
Salvatore Timpa, Mehrdad Rahimi, Jacko Rastikian, Stéphan Suffit, François Mallet, Philippe Lafarge, Clément Barraud, and Maria Luisa Della Rocca
Salvatore Timpa, Mehrdad Rahimi, Jacko Rastikian, Stéphan Suffit, Philippe Lafarge, Clément Barraud affiliated to Laboratoire Matériaux et Phénomènes Quantiques, Université de Paris, CNRS-UMR7162, 75013 Paris, France François Mallet affiliated Laboratoire Matériaux et Phénomènes Quantiques, Université de Paris, CNRS-UMR7162, 75013 Paris, France and Sorbonne Université, UFR925, 75005 Paris, France

**15:45** **DISCUSSION AND CLOSING**

# SYMPOSIUM I

## Sustainable approaches for renewable energy conversion to fuels and chemicals

*Symposium Organizers :*

Ann MAGNUSON, Department of Chemistry - Ångström Laboratory

Bert M. WECKHUYSEN, Utrecht University

Francisco FABREGAT-SANTIAGO, Institute of Advanced Materials (INAM) Universitat Jaume I

Frédéric CHANDEZON, IRIG Dir

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### Artificial Photosynthesis I : Maria Wächtler

**09:00** INV **Kinetic challenges for solar driven fuel synthesis - matching photoexcited state and catalysis timescales** — I 1.1
James Durrant
Department of Chemistry, Centre for Processable Electronics, Imperial College London, London W12 0BZ, U.K. and SPECIFIC IKC, College of Engineering, University of Swansea, Swansea, U.K. E-mail: j.durrant@imperial.ac.uk

**09:30** INV **Molecular Mechanisms of Artificial Photosynthesis** — I 1.2
Leif Hammarström
Department of Chemistry – Ångström Laboratory, Uppsala University, Box 523, S75120 Uppsala, Sweden

**10:00** **Oligoethylene glycol side chains increase charge generation in organic semiconductor nanoparticles photocatalyst** — I 1.3
Kosco, J. (1), Gonzalez-Carrero, S.* (2), Howells, C. T. (1), Zhang, W. (1), Moser, M. (3), Sheelamanthula, R. (1), Zhao, L. (1), Willner, B. (3), Hidalgo, T. C. (1), Faber, H. (1), Purushothaman, B. (1), Sachs, M. (2), Cha, H. (2), Sougrat, R. (1), Anthopoulos, T. D. (1), Inal, S. (1), Durrant, J. R. (2), McCulloch, I. (1,3)
(1) King Abdullah University of Science and Technology (KAUST), Thuwal, Kingdom of Saudi Arabia (2) Department of Chemistry and Centre for Processable Electronics, Imperial College London, London, UK* (3) Department of Chemistry University of Oxford, Oxford, UK

**10:30** **Discussion**

**10:45** **Coffee**

### Artificial Photosynthesis II : Leif Hammarström

**11:00** INV **Molecular approaches to artificial photosynthesis and solar fuel production** — I 2.1
Murielle Chavarot-Kerlidou
LCBM, Université Grenoble Alpes/CNRS/CEA Grenoble, France

**11:30** **Photosynthesis re-wired on the pico-second timescale** — I 2.2
Laura T. Wey2+, Tomi K. Baikie1+, Hitesh Medipally3, Erwin Reisner4, Marc M. Nowaczyk3, Richard H. Friend1, Christopher J. Howe2*, Christoph Schnedermann1*, Akshay Rao1*, Jenny Z. Zhang4*
1 - Cavendish Laboratory, University of Cambridge, J. J. Thomson Avenue, Cambridge, CB3 0HE, UK 2 - Department of Biochemistry, University of Cambridge, Tennis Court Road, Cambridge, CB2 1QW, UK 3 - Plant Biochemistry, Ruhr-Universität Bochum, Universitätsstrasse 150, 44780 Bochum, Germany 4 - Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge, CB1 2EW, UK

**11:45** **Organic Polymer Dots for Photocatalysis** — I 2.3
Haining Tian
Department of Chemistry - Ångström Lab., Uppsala University, Box 523, 75120 Uppsala, Sweden

**12:00** **Discussion**

**12:15** **Lunch**

**15:15** **Perovskite-Type Oxynitride Nanofibers Performing Photocatalytic Oxygen and Hydrogen Generation** — I 3.2
Hofmann, A.*, Weiss, M., Timm, J., Marschall, R.
University of Bayreuth, Universitätsstr. 30, 95447 Bayreuth, Germany * lead presenter

**15:30** **Mesoporous High-Entropy Oxide Thin Film Electrodes: Electrocatalytic Water Oxidation on High-Surface Area Spinels** — I 3.3
Marcus Einert*, Maximilian Mellin, Niloufar Bahadorani, Christian Dietz, Stefan Lauterbach, and Jan P. Hofmann*
Surface Science Laboratory, Department of Materials and Earth Sciences, Technical University of Darmstadt, Otto-Berndt-Strasse 3, 64287 Darmstadt, Germany Institute of Materials Science, Physics of Surfaces, Technical University of Darmstadt, Alarich-Weiss-Strasse 2, 64287 Darmstadt, Germany Institute for Applied Geosciences, Geomaterial Science, Technical University of Darmstadt, Schnittspahnstrasse 9, 64287 Darmstadt, Germany



**15:45** **Metallochaperone-like effect of a hydrophobic ligand in FeOx/BiVO4 nanohybrid formation for photoelectrochemical water oxidation** — I 3.4
Tímea Benkó (1), Shaohua Shen (2), Miklós Németh (1), Ákos Szamosvölgyi (3), András Sápi (3), György Sáfrán (4), Sahir M. Al-Zuraiji (1), József Sándor Pap (1)
(1) Centre for Energy Research, Surface Chemistry and Catalysis Department, 29-33 Konkoly-Thege Street, H-1121 Budapest, Hungary, (2) International Research Center for Renewable Energy (IRCRE), State Key Laboratory of Multiphase Flow in Power Engineering (MFPE), Xi'an Jiaotong University, Xi'an, Shaanxi 710049, China, (3) University of Szeged, Interdisciplinary Excellence Centre, Department of Applied and Environmental Chemistry, H-6720, Rerrich Béla tér 1, Szeged, Hungary, (4) Centre for Energy Research, Institute of Technical Physics and Materials Science, Thin Film Physics Department, Konkoly-Thege street 29-33, 1121 Budapest, Hungary

**16:00** **Role of anion etching and heteroatom incorporation in cobalt silicate precatalyst for improved OER** — I 3.5
Dr. Debashrita Sarkar1,2 ,Dr. Sagar Ganguli1,3 ,Ayan Mondal1 ,Prof. Venkataramanan Mahalingam1
1- Indian Institute of Science Education and Research Kolkata, India 2- Université de Paris, France 3- Uppsala University, Sweden

**16:15** **Discussion**

**16:30** **Coffee**

### I : Francisco Fabregat-Santiago & Ann Magnunson

**16:45** **Energy Generation From Active Heteroatom (N and P) Based Porous Carbon: Hydrazine Oxidation Reaction** — I P1.1
Nisha Dhiman, Kumud Malika Tripathi, Paritosh Mohanty
Nisha Dhiman: Indian Institute of Technology, Roorkee and Indian Institute of Petroleum and Energy, Visakhapatnam Paritosh Mohanty: Indian Institute of Technology, Roorkee Kumud Malika Tripathi: Indian Institute of Petroleum and Energy, Visakhapatnam

**16:45** **Enhanced elastocaloric cooling performances in gradient nanograined NiTi shape memory alloy** — I P1.2
Junyu Chen
State Key Laboratory of Tribology, Department of Mechanical Engineering, Tsinghua University, Beijing 100084, China

**16:45** **A polyphenolic interface layered Al-fluorinated organic compounds for improved combustion properties for energetic applications** — I P1.3
Virendrakumar G. Deonikar, Hern Kim* Lead presenter: Virendrakumar G. Deonikar, Email: virendradeonikar@gmail.com *Corresponding author: Prof. Hern Kim, Email: hernkim@mju.ac.kr
Environmental Waste Recycle Institute, Department of Energy Science and Technology, Myongji University, Yongin, Gyeonggi-do 17058, Republic of Korea

**16:45** **Catalytic performance of ionic liquid on the carboxylation of glycerol to glycerol carbonate with carbon dioxide** — I P1.4
Atul A. Pawar, Hern Kim*
Myongji University Yongin, Republic of Korea.

**16:45** **Transition metal-carbon composites as an efficient electrocatalyst for nitrogen reduction to ammonia** — I P1.5
Rajendra B. Mujmule, Hern Kim*
Department of Energy Science and Technology / Environmental Waste Recycle Institute, Myongji University

**16:45** **Tuning the properties of MnO2 OER electrocatalysts: influence of the substrate and of surface functionalization** — I P1.6
Alberto Gasparotto,*,a,b Lorenzo Bigiani,a Chiara Maccato,a,b Cinzia Sada,c Johan Verbeeck,d Teresa Andreu,e,f Juan Ramón Morante,e,f Davide Barreca.b
a. Department of Chemical Sciences, Padova University and INSTM, 35131 Padova, Italy b. CNR-ICMATE and INSTM, Department of Chemical Sciences, Padova University, 35131 Padova, Italy c. Department of Physics and Astronomy, Padova University and INSTM, 35131 Padova, Italy d. EMAT and NANOlab Center of Excellence, University of Antwerp, 2020 Antwerpen, Belgium e. Universitat de Barcelona (UB), 08028 Barcelona, Spain f. Catalonia Institute for Energy Research - IREC, Sant Adrià de Besòs, 08930 Barcelona, Spain

**16:45** **Synthesis of metal@carbon nanostructured model electrodes and studies of their electrochemical response at the nanoscale** **I P1.7**
Brazel, L. (1),* Brunet Cabré, M.(1), Schroeder, C.(1), Nolan, H.(1), McKelvey, K.(1) (2), Colavita, P.E.(1)
(1) School of Chemistry, Trinity College Dublin, College Green, Dublin 2, Ireland,
(2) School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington 6012, New Zealand

**16:45** **Improving the heat-electricity conversion performance of thermoelectric generators based on evaporative cooling technology** **I P1.8**
Liang Jun Zheng, Dong Hee Kang, Min Liang Wang, Hyun Wook Kang *
Department of Mechanical Engineering, Chonnam National University, Korea

**16:45** **Electrochemical study of copper oxides heterostructures as photocatalysts for CO2 conversion to formic acid** **I P1.9**
Bălan, A.E. (1), Stamatin, S.N. (1), Iacob, M.T. (1,2), Diac, C.*(1), Mitrea, B.C. (1,2), Esmaeil Jalali Lavasani (1,2), Stamatin, I. (1)
(1) 3Nano-SAE Research Centre, PO Box MG-38, Bucharest – Magurele, Romania
(2) University of Bucharest, Faculty of Physics, PO Box MG-38, Bucharest – Magurele, Romania

**16:45** **The Influence of Cu, Ag, and TiO2 Nanoparticles on Plants Photosynthesis Process** **I P1.10**
Mitrea B. C. (1,2), Nichita C. (1,2), Diac C. (1), Dobrica B.(1), Stamatin I. (1)
(1) 3Nano-SAE Research Centre, PO Box MG-38, Bucharest – Magurele, Romania
(2) University of Bucharest, Faculty of Physics, ICUB, PO Box MG-38, Bucharest – Romania

**16:45** **Effect of Noble Metal Dope into 2D Layered Perovskites for Photocatalytic CO2 Reduction** **I P1.11**
Yilmaz, B.*(1), Unal, U.(1)
(1)Koc Univesity, Turkey

**16:45** **Graphene/TiO2 Photocatalysts Synthesis By Laser Pyrolysis For Ethylene Production** **I P1.12**
Juliette Karpiel1,2, Pierre Lonchambon1, Frédéric Dappozze2, Nathalie Herlin1, Chantal Guillard2
(1) University of Paris-Saclay, CEA,CNRS, NIMBE, Gif-sur-Yvette Cedex, France.
(2) University of Lyon 1, IRCELYON, CNRS, Villeurbanne, France.



**Tuesday may 31**

## CO2 reduction I : Marc Robert

**09:00** INV **Unveiling the Dynamic Behavior of CO2 Electrocatalysts through in situ Microscopy and Operando Spectroscopy** **I 4.1**
Beatriz Roldan Cuenya
Department of Interface Science, Fritz-Haber-Institute of the Max Planck Society, Berlin

**09:30** INV **Probing CO2 reduction dynamics with time-resolved Raman spectroscopy** **I 4.2**
Ward van der Stam
Inorganic Chemistry and Catalysis, Utrecht University, The Netherlands. Email: w.vanderstam@uu.nl

**10:00** **Shaping of mesoporous CeO2 powder into mm-sized catalyst supports for CO2 methanation** **I 4.3**
Elena Martín Morales, Andreína Alarcón, Elena Xuriguera, Jordi Guilera
Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs, Spain, Escuela Superior Politécnica del Litoral, ESPOL, Facultad de Ingeniería en Ciencias de la Tierra, Campus Gustavo Galindo Km.30.5 Vía Perimetral, P.O. Box 09-01-5863, Guayaquil, Ecuador, DIOPMA, Departament de Ciència de Materials i Química Física, Facultat de Química, Universitat de Barcelona, Martí i Franquès 1-11, 08028, Barcelona, Spain, Chemical Engineering and Analytical Chemistry Department, University of Barcelona, Martí i Franquès 1-11, 08028 Barcelona, Spain

**10:15** **Nanoscale properties of colloidal CeO2: Synthesis, lanthanide doping and applications** **I 4.4**
Hervés-Carrete, C. (1)*, Bastús, N.G. (1), Puntes, V.F. (1, 2, 3)
(1) Catalan Institute of Nanoscience and Nanotechnology (ICN2), Spain (2) Vall d'Hebron Institut de Recerca (VHIR), Spain (3) Institució Catalana de Recerca i Estudis Avançats (ICREA), Spain

**10:30** **Discussion**

**10:45** **Coffee**

## CO2 reduction II : Debashrita Sarkar

**11:00** INV **Hybridization of molecular and conductive/semi-conductive porous materials for CO2 catalytic reduction** **I 5.1**
Marc Robert
Université de Paris, Laboratoire d'Electrochimie Moléculaire, CNRS, F-75006 Paris, France

**11:30** **Direct-synthesis of AgxCu100-x bimetallic nanoparticles on p-Si supports for the photoelectrochemical reduction of CO2** **I 5.2**
Harsh Chaliyawala1, Stephane Bastide1, Diane Muller-Bouvet1, Tarik Bourouina2, Fréderic Marty2, Abir Rezgui2, S. Le Gall3, Encarnacion Torralba1 *
(1) Univ Paris Est Creteil, CNRS, Institut de Chimie et des Matériaux Paris-Est (ICMPE), UMR 7182, 2 rue Henri Dunant, 94320 Thiais, France (2) ESYCOM - Electronique, Systèmes de communication et Microsystèmes (Université de Paris-Est - Marne-la-Vallée) Cité Descartes, 77454 Marne-la-Vallée Cedex 2, France (3) Group of electrical engineering Paris, UMR CNRS 8507, Centrale Supélec, (Univ. Paris Sud) 91192 Gif sur Yvette CEDEX, France

**11:45** **Electrochemical CO2 conversion to nanocarbons in Li-K-Na molten salt electrolyte: tuning the nanocarbon morphology** **I 5.3**
Giannakopoulou T.*, Todorova N., Vagenas M., Plakantonaki N., Papailias I., Trapalis C.
Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos", Greece

**12:00** **Discussion**

**12:15** **Lunch and Plenary**

## CO2 reduction III : Joanna Kargul

**15:00** INV **Alternative fuels and chemicals – with materials science from renewable electricity, CO2 and water up to the final product** **I 6.1**
Dr. Carina Faber, Dr. Hélène Lepaumier, Jim Gripekoven, Dr. Jan Mertens
ENGIE Laborelec, Linkebeek, Belgium, ENGIE Laborelec, Linkebeek, Belgium, ENGIE Laborelec, Linkebeek, Belgium, ENGIE S.A., Paris, France,

**15:30** **High-rate CO2 electrocatalytic reduction to formate with InP colloidal quantum dots derived catalysts** **I 6.2**
Ivan Grigioni, Edward H. Sargent, Elena Sellia
Dipartimento di Chimica, Università degli Studi di Milano, Via Golgi 19, 20133 Milano, Italy Department of Electrical and Computer Engineering, University of Toronto, Ontario, Canada, Department of Electrical and Computer Engineering, University of Toronto, Ontario, Canada, Dipartimento di Chimica, Università degli Studi di Milano, Via Golgi 19, 20133 Milano, Italy

**15:45** **CO2 reduction using nanostructured metal oxide/catalyst hybrid layers assembled at photoelectrodes** **I 6.3**
Julian Guerrero[1][2], Nathanaelle Schneider[2], Daniel Lincot[2], Negar Naghavi[2], Marc Robert[1][3]
[1] J. Guerrero, Prof. M. Robert Laboratoire d'Electrochimie Moléculaire, Université de Paris, CNRS, F-75006 Paris, France [2] J. Guerrero, N. Schneider, N. Naghavi, Prof. D. Lincot Institut Photovoltaïque d'Île-de-France (IPVF), CNRS, UMR 9006, 91120 Palaiseau, France [c] Prof. M. Robert Institut Universitaire de France (IUF), F-75005, Paris, France

**16:00** **Effect of noble metal doping on Layered CsCa2Ta3O10 for photocatalytic conversion of CO2 into valuable fuels** **I 6.4**
Tugba Yalcın (1,2), Ugur Unal (1)
(1) Koc University, Materials Science and Engineering Dept. Rumelifeneri yolu Sarıyer Istanbul Turkey , (2) Arçelik, Turkey

**16:15** **Discussion**

**16:30** **Coffee**

## Characterization and Modeling I : Bert Weckhuysen

**16:45** INV **Recent Insights on Photoelectrochemical Interfaces from XPS Studies** **I 7.1**
Roel van de Krol
1. Institute for Solar Fuels, Helmholtz-Zentrum Berlin für Materialien und Energie, 14109 Berlin, Germany. Email: roel.vandekrol@helmholtz-berlin.de 2. Institut für Chemie, Technische Universität Berlin, Berlin, Germany

**17:15** **Bifunctional earth-abundant catalysts combined with solar cells for solar to hydrogen fuel production** **I 7.2**
M.G. Méndez-Medrano,1 Nicolas Loones,1 Frederique Donsanti,1 Alexandre Blaizot,1 Negar Naghavi,1,2
1 IPVF Institut Photovoltaïque d'Île-de France, 91128 Palaiseau, France. 2 CNRS-Institut Photovoltaïque d'Île-de France, UMR 9006 , 91128 Palaiseau, France,

**17:30** **Superior overall water splitting performances of electroless deposited Ni-P films** **I 7.3**
Sergio Battiato, Luca Bruno, Antonio Terrasi, Salvo Mirabella
Dipartimento di Fisica e Astronomia "Ettore Majorana" and IMM-CNR, via S. Sofia 64, 95123, Catania, Italy

**17:45** **Hydrogen Evolution Reaction catalysed by low-cost synthesized WO3 nanorods** **I 7.4**
G. Mineo1-2, M. Scuderi3, E. Bruno1-2, S. Mirabella1-2
1 Dipartimento di Fisica e Astronomia "Ettore Majorana", Università degli Studi di Catania, via S. Sofia 64, 95123 Catania, Italy, 2 CNR-IMM (Università di Catania), via S. Sofia 64, 95123 Catania, Italy, 3 IMM-CNR, VIII strada 5, 95121 Catania, Italy,

**18:00** **Discussion**



**Wednesday june 1**

## Bioconversion & Synthesis of added value products I : Ann Magnuson

**09:00** INV **Rational design of bio-organic interfaces for improved efficiency of photosystem I-based solar converting nanodevices** **I 8.1**
Joanna Kargul
Solar Fuels Laboratory, Centre of New Technologies, University of Warsaw, Banacha 2C, 02-097 Warsaw, Poland

**09:30** INV **Bioinspired nonadiabatic principles for artificial photosynthesis with high yield** **I 8.2**
Huub de Groot
Leiden Institute of Chemistry, Leiden University, The Netherlands

**10:15** **Development of Ru-Carbon Electrocatalysts for the Electrochemical Nitrogen Reduction Reaction** **I 8.3**
Dario Formenti (1),* Yannik Kohlhaas (2), Zhenglin Zhuang (1), Xin Wei (1), Maria Meledina (3), Matthias Wessling (2), Robert Keller (2), Joachim Mayer (3), Ulrich Simon (1)
(1) Institute of Inorganic Chemistry – RWTH Aachen University, Germany, (2) Chemical Process Engineering – RWTH Aachen University, Germany, (3) Central Facility for Electron Microscopy – RWTH Aachen University, Germany

**10:30** **What makes lithium unique in its ability to reduce nitrogen to ammonia?** **I 8.4**
Ifan E. L. Stephens
Department of Materials, Imperial College London

**10:45** **Discussion**

## Bioconversion & Synthesis of added value products II : Ifan Stephens

**11:00** INV **Electrosynthesis with molecular catalysts immobilized on conducting surfaces via host–guest interactions** **I 9.1**
David Tilley
University of Zurich

**11:30** **Alternative generation of ammonia via nitrate and N2 reduction through electrochemical routes** **I 9.2**
Sebastian Murcia-Lopez,1 Marcelo E. Chavez,1 Juan R. Morante 1,2
1. Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, Sant Adrià de Besós, 08930, Spain 2. University of Barcelona (UB), Martí i Franquès 1, Barcelona, 08020, Spain

**11:45** **Reforming of Soluble Biomass and Plastic Derived Waste using a Bias-Free Cu30Pd70|perovskite|Pt Photoelectrochemical Device** **I 9.3**
Subhajit Bhattacharjee, Virgil Andrei, Chanon Pornrungroj, Motiar Rahaman, Christian M. Pichler and Erwin Reisner*
Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge CB2 1EW, United Kingdom.

**12:00** **Discussion**

**12:15** **Lunch and Plenary**

## Bioconversion & Synthesis of added value products III : David Tilley

**15:00** INV **Photo- and electro-catalyst development: carbon nitride and NiFe-oxide for catalytic oxidation of organic molecules to value-add** **I 10.1**
Menny Shalom
Department of Chemistry, Ben-Gurion University of the Negev, Beer-Sheva, Israel

**15:30** **Co-based bimetallic catalysts for the production of hydrocarbons (C2-C4) via the direct hydrogenation of CO2 and CO.** **I 10.2**
A. Alarcón 1, O. Palma1, E. Martínez1, M. Biset1, T. Andreu2, J. Guilera1
1. Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs, Spain 2. Departament de Ciència de Materials i Química Física, Universitat de Barcelona, Martí i Franquès, 1, Barcelona 08028, Spain

**15:45** **Study of the electrochemical hydrogenation of nitrobenzene in Cu and CuPd electrodes** **I 10.3**
Carvajal, D* (1), Arcas, R (1), Mesa, C (1), Giménez, S (1), Fabregat-Santiago, F (1), Mas-Marzá, E (1).
(1) Group of Advances Materials and Energy, Institute of Advanced Materials, Universitat Jaime I, Spain.

**16:00** **Optimization of electrochemical conditions for Hydrogen storage in the GO lattice** **I 10.4**
Nina M. Carretero*, S. Murcia*, J. R. Morante*+
* IREC, Catalonia Institute for Energy Research, Sant Adriá del Besós, 08930, Spain, + Dept. Enginyieries: Electronica, Universitat de Barcelona, Barcelona, 08028, Spain

**16:15** **Discussion**

**16:30** **Coffee**

## II : Bert Weckhuysen & Frederic Chandezon

**16:45** **NiO nanoparticles obtained by pulsed laser ablation in liquid for oxygen evolution reaction** **I P2.1**
V. Iacono (1,2), L. Bruno (1,2), E. Bruno (1,2), F. Ruffino (1,2), S. Mirabella (1,2)
(1) Dipartimento di Fisica e Astronomia "Ettore Majorana", Università di Catania, via S. Sofia 64, 95123 Catania, Italy, (2) CNR-IMM (Catania Università), via S. Sofia 64, 95123 Catania, Italy,

**16:45** **Tuning oxygen evolution performance via A-site Ag+ doping in SrCo0.75Fe0.25O3 perovskite** **I P2.2**
Ziwei Huo.*(1) , Dongsheng Geng.*(1).
(1)Beijing Advanced Innovation Center for Materials Genome Engineering, School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing 100083, China * lead presenter

**16:45** **Plasma-assisted fabrication of Mn2O3-based electrocatalysts on Ni foam substrates for the oxygen evolution reaction** **I P2.3**
Davide Barreca,a,* Chiara Maccato,a,b Lorenzo Bigiani,b Teresa Andreu,c,d Alberto Gasparotto,a,b Cinzia Sada,e Evgeny Modin,f Oleg I. Lebedev,g Juan Ramon Morante.c,d
a. CNR-ICMATE and INSTM, Department of Chemical Sciences, Padova University, 35131 Padova, Italy b. Department of Chemical Sciences, Padova University and INSTM, 35131 Padova, Italy c. IREC, Catalonia Institute for Energy Research, 08930 Sant Adrià de Besòs, Barcelona, Catalonia, Spain d. Universitat de Barcelona (UB), 08028 Barcelona, Spain e. Department of Physics and Astronomy, Padova University and INSTM, 35131 Padova, Italy f. CIC nanoGUNE BRTA, 20018 Donostia - San Sebastian, Spain g. Laboratoire CRISMAT, ENSICAEN UMR6508, 14050 Caen Cedex 4, France

**16:45** **Enhanced Electrocatalytic Intrinsic Activity of NiO Microflowers on Graphene Paper for Oxygen Evolution Reaction** **I P2.4**
Bruno, L.*(1,2), Scuderi, M.(3), Priolo, F.(1,2), Falciola, L. (4) & Mirabella, S.(1,2)
(1) Dipartimento di Fisica e Astronomia "Ettore Majorana", Università di Catania, via S. Sofia 64, 95123 Catania, Italy, (2) CNR-IMM, via S. Sofia 64, 95123 Catania, Italy, (3) CNR-IMM, VIII strada 5, 95121 Catania, Italy, (4) Dipartimento di Scienze Chimiche, Università degli Studi di Catania, viale Andrea Doria 8, 95123, Catania, Italy.

**16:45** **Modifying the Electron-Trapping Process at the BiVO4 Surface States via the TiO2 Overlayer for Enhanced Water Oxidation** **I P2.5**
Usman, E.*(1),(2), Barzgar Vishlaghi, M.(1),(2), Kahraman, A.(1),(2), Solati, N.(1),(2), Kaya, S.(1),(2),(3)
(1) Materials Science and Engineering, Koc University, Turkey, (2) Koc University Tupras Energy Center (KUTEM), Turkey, (3) Department of Chemistry, Koc University, Turkey, * lead presenter

**16:45** **Plasma-Assisted Synthesis of Co3O4-Based Electrocatalysts on Ni Foam Substrates for the Oxygen Evolution Reaction** **I P2.6**
Chiara Maccato, Lorenzo Bigiani, Leonardo Girardi, Alberto Gasparotto, Oleg I. Lebedev, Evgeny Modin, Davide Barreca, Gian Andrea Rizzi
L. Bigiani, L. Girardi, Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy, Chiara Maccato, Alberto Gasparotto, Gian Andrea Rizzi, Department of Chemical Sciences, Padova University, CNR-ICMATE and INSTM, Padova 35131, Italy, Davide Barreca, CNR-ICMATE, INSTM and Department of Chemical Sciences, Padova University, 35131, Padova, Italy, Oleg I. Lebedev, Laboratoire CRISMAT UMR 6508 CNRS/ENSICAEN/UCBN, Caen Cedex 4 14050, France, Evgeny Modin, CIC nanoGUNE BRTA, Donostia, San Sebastian 20018, Spain

**16:45** **Kinetics of Active Oxide Species Derived from Metallic Nickel Surface for Efficient Electrocatalytic Water Oxidation** **I P2.7**
Yimeng Ma
College of Chemistry and Chemical Engineering, Donghua University, Shanghai, 201620, China



**16:45** **Synthesis and Development of Thin-film Catalyst Materials for Electrolysis** **I P2.10**
Muhammad Sadaf Hussain, Faria Rafique, Dr Imran Din
Institute of Chemistry, University of the Punjab Lahore, Pakistan

**16:45** **Investigation of the photoelectrochemical hydrogen evolution reaction on exfoliated SnSe electrodes** **I P2.11**
Qianqian Ba, Péter S Tóth, Csaba Janáky
Department of Physical Chemistry and Materials Science, Interdisciplinary Excellence Center, University of Szeged, Rerrich Sq. 1, Szeged, 6720, Hungary

**16:45** **Effect of Noble Metal Doping to Layered KCa2NaNb4O13 on Hydrogen Evolution Reaction** **I P2.12**
Demir, A.B.*(1), Unal, U(2)
(1) Koc University, Turkey

**16:45** **Cobalt iron oxyhydroxide electrocatalyst for water oxidation obtained by in-situ transformation of phosphides** **I P2.14**
María Isabel Díez García, Guillem Montaña, Marc Botifoll, Andreu Cabot, Jordi Arbiol, Mohammad Qamar, Joan Ramon Morante
María Isabel Díez-García,1 Guillem Montaña,1 Marc Botifoll,2 Andreu Cabot,1,3 Jordi Arbiol,2,3 Mohammad Qamar,4 Joan Ramon Morante1 1 Catalonia Institute for Energy Research (IREC) Jardins de les Dones de Negre 1, Sant Adrià de Besós, Spain 2 Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Campus UAB, Bellaterra, 08193 Barcelona, Catalonia, Spain 3 ICREA, Pg. Lluís Companys 23, 08010 Barcelona, Catalonia, Spain 4 Interdisciplinary Research Center for Hydrogen and Energy Storage, King Fahd University of Petroleum and Minerals, Dhahran, 31261, Saudi Arabia

**18:00** **E-MRS EU-40 Materials Prize & MRS Mid-Career Researcher Award Presentations**

## Thursday june 2

### Water Spliting I : Murielle Chavarot-Kelidou

**09:00** INV **(Photo)electrochemical Water Splitting Catalyzed by Materials with Well Defined Active Site Structures** — I 11.1
Licheng Sun
1 Center of Artificial Photosynthesis for Solar Fuels, School of Science, Westlake University, 310024 Hangzhou, China 2 Department of Chemistry, KTH Royal Institute of Technology, 10044 Stockholm, Sweden

**09:30** INV **Molecular anodes for green and sustainable energy applications** — I 11.2
Antoni Llobet
Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST), Av. Països Catalans 16, E-43007 Tarragona, Spain and Departament de Química Universitat Autònoma de Barcelona, Cerdanyola del Vallès, E-08193 Barcelona, Spain. E-mail: allobet@iciq.cat

**10:00** **Core shell nanoparticles: a catalyst for the oxygen evolution reaction** — I 11.3
Lisa Royer, Antoine Bonnefont, Benoit Pichon, Elena Savinova
Lisa Royer: Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé, UMR 7515, CNRS-University of Strasbourg, 67087 Strasbourg Cedex 2, France, Benoit Pichon: Institut de Physique et de Chimie des Matériaux de Strasbourg, UMR 7504, CNRS-University of Strasbourg, 67034 Strasbourg Cedex 2, France, Bonnefont Antoine, Institut de Chimie de Strasbourg, UMR 7177 CNRS-University of Strasbourg, 67070, Strasbourg, France, Elena Savinova: Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé, UMR 7515, CNRS-University of Strasbourg, 67087 Strasbourg Cedex 2, France

**10:15** **Development of Highly Efficient Self-Supported Transition Metal Based Catalysts for Water Splitting** — I 11.4
Faria Rafique, Dr Habib ur Rehman, Dr. Joe Briscoe
Syed Babar Ali School of Science and Engineering, LUMS - Lahore University of Management Sciences School of Engineering and Materials Science, Queen Mary University of London

**10:30** **Discussion**

**10:45** **Coffee**

### Water Spliting II : Toni Llobet

**11:00** INV **Water splitting using wired perovskite tandem solar cells and molecular catalysts.** — I 12.1
Yuanyuan Shi 1, Tsung-Yu Hsieh 1, Md Asmaul Hoque 1, Werther Cambarau 1, Stéphanie Narbey 2, Carolina Gimbert-Suriñach 1, Emilio Palomares 1 3, Mario Lanza 4, Antoni Llobet 1 5
1 Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST), Avinguda Països Catalans, 16, 43007 Tarragona, Spain. 2 Solaronix S.A., Rue de l'Ouriette 129, CH-1170 Aubonne, Switzerland. 3 ICREA, Passeig Lluís Companys 23, 08010 Barcelona, Spain. 4 Physical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), 23955-6900 Thuwal, Saudi Arabia. 5 Departament de Química, Universitat Autònoma de Barcelona (UAB), 08193 Cerdanyola del Vallès, Barcelona, Spain.

**11:30** **Water splitting performance of selenium based Chevrel phase: CoW6Se8** — I 12.2
Gencer, A.* (1), Surucu, G. (2),(3), Ozel, F. (4).
(1) Karamanoglu Mehmetbey University, Department of Physics, Karaman, Turkey, (2) Middle East Technical University, Department of Physics, Ankara, Turkey, (3) Ahi Evran University, Department of Electric and Energy, Kirsehir, Turkey, (4) Karamanoglu Mehmetbey University, Department of Metallurgy and Materials Engineering, Karaman, Turkey,

**11:45** **Ferroelectric BiFeO3-PbTiO3 films for photoelectrochemical water splitting** — I 12.3
Haozhen Yuan, Joe Briscoe
School of Engineering and Material Science and Materials Research Institute, Queen Mary University of London, London, E1 4NS

**12:00** **Discussion**

**12:15** **Lunch and Plenary**



### Applications to industry : Roel Van de Krol

**15:00** INV **Scalable photoelectrochemical hydrogen production and storage in a liquid silicon hydride carrier** — I 13.1
Hannah Johnson
Toyota Europe

**15:30** **TRIBOCHEMICAL DECOMPOSITION OF SODIUM ALANATE (NaAlH4)** — I 13.2
Muñoz-Cortés, E.*(1), Ibryaeva O. L.,(2) Manso, M.,(3) Zabala, B.,(4) Flores. E.,(5) Ares, J.R.(1) & Nevshupa, R (6).
(1) Department of Physics of Materials, Autonoma University of Madrid, Spain, (2) Department of System Programming, South Ural State University, Chelyabinsk, Russia, (3) Department of Applied Physics, Nicolás Cabrera Institute and Centre for Microanalysis of Materials, Autonoma University of Madrid, Spain, (4) Tribology unit, Fundación Tekniler, Eibar, Spain, (5) Departamento de Física Aplicada, Centro de Investigación y de Estudios Avanzados, Unidad Mérida, 97310, Mérida, Yucatan, México, (6) Spanish National Research Council, Eduardo Torroja Institute of Construction Sciences (IETCC-CSIC), Madrid, Spain, *esmeralda.munnoz@estudiante.uam.es

**15:45** **Towards high productivity cathodes for hydrogen evolution reaction based on metal phosphides** — I 13.3
María Isabel Díez García, Sebastian Murcia, Joan Ramon Morante
María Isabel Díez García, Sebastian Murcia, Joan Ramon Morante Catalonia Institute for Energy Research (IREC) Jardins de les Dones de Negre 1, Sant Adrià de Besós, Spain

**16:00** **Exploring the Advanced Tailor-made Catalyst materials and Systems for the Up-scaled Electroconversion of CO2** — I 13.4
Tandava. V.S.R.K., Andrés Alberto García, Sebastián Murcia-López , Joan Ramón Morante*
Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930, Sant Adrià de Besòs, Spain.

**16:15** **Discussion**

**16:30** **Coffee**

### Applications to Industry II : Hannah Johnson

**16:45** INV **Development upscaling of an electrochemical technology for the conversion of CO2** — I 14.1
Annelie Jongerius
Avantium Chemicals

**17:15** **Copper Vanadate Nanobelts as Anodes for PEC Water Splitting: Influence of CoOx Overlayers on Functional Performances** — I 14.2
Leonardo Girardi, Gian Andrea Rizzi*, Lorenzo Bigiani, Davide Barreca, Chiara Maccato, Carla Marega, Gaetano Granozzi
Leonardo Girardi – Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy, Gian Andrea Rizzi* – Department of Chemical Sciences, Padova University, CNR-ICMATE and INSTM, Padova 35131, Italy, Lorenzo Bigiani – Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy, Davide Barreca – CNR-ICMATE, INSTM and Department of Chemical Sciences, Padova University, Padova 35131, Italy, Chiara Maccato – Department of Chemical Sciences, Padova University, CNR-ICMATE and INSTM, Padova 35131, Italy, Carla Marega – Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy, Gaetano Granozzi – Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy

**17:30** **Recent advances in lanthanide-doped TiO2 thin films for green hydrogen strategies** — I 14.3
Katarzyna Zakrzewska, Marta Radecka
AGH-University of Science and Technology, al. Mickiewicza 30, 30-059 Kraków, Poland

**17:45** **(Cu3-x Nix)Co2-Layered Double Hydroxide Nanosheets for Enhanced Electrocatalytic Activity Towards Water Splitting** — I 14.4
Sakshi Kansal, Debabrata Mandal, Surbhi Priya, Satvik Anshu, Trilok Singh, Amreesh Chandra
Research Scholar, Research Scholar: Research Scholar, Research Scholar, Professor, Professor

**18:00** **Discussion**

**Friday june 3**

## Characterization and Modeling II : Huub de Groot

**09:00** INV **Multi-scale modelling for photoelectrochemical water and CO2 splitting** — I 15.1
Sophia Haussener
Laboratory of Renewable Energy Science and Engineering, Institute of Mechanical Engineering, École Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland.

**09:30** INV **Charge-carrier dynamics in hybrid materials based on colloidal semiconductor nanocrystals for light-driven catalysis** — I 15.2
Maria Wächtler
Leibniz Institute of Photonic Technology

**10:00** **Oxygen electrocatalysis at transition metal oxides: correlating activity with orbital occupancy under operational conditions** — I 15.3
Mohammed A. Alkhalifah, Benjamin Howchen, Joseph Staddon, Veronica Celorrio, Devendra Tiwari, David J. Fermin
School of Chemistry, University of Bristol, Cantocks Close, Bristol BS8 1TS, UK

**10:15** **Probing the optoelectronic structure of (Ir, Al)-codoped SrTiO3 for enhanced photocatalytic activity** — I 15.4
Namitha Anna Koshi,† Dharmapura H K Murthy,‡ Sudip Chakraborty,¶ Seung-Cheol Lee,§ and Satadeep Bhattacharjee†
†Indo-Korea Science and Technology Center (IKST), Jakkur, Bengaluru 560065, India ‡Materials Science and Catalysis Division, Poornaprajna Institute of Scientific Research,Devanahalli, Bengaluru 562164, India ¶Materials Theory for Energy Scavenging (MATES) Lab, Harish-Chandra Research Institute(HRI) Allahabad, HBNI, Chhatnag Road, Jhunsi, Prayagraj (Allahabad) 211019 India §Electronic Materials Research Center, KIST, Seoul 136-791, South Korea

**10:30** **Discussion**

**10:45** **Coffee**

## Water Spliting III : David Fermin

**11:00** INV **Coupling of enzymes and sulphides to achieve water splitting and CO2 reduction** — I 16.1
Conesa, J.C.*(1), Osgouei, M.(1), Faraldos, M.(1), Coito, A.M.(2), Pereira, I. A. C.(2), Shleev, S.(3) , Rana, M.(4), Vilatela, J.J.(4), Pita, M.(1), De Lacey, M.(1)
(1) Instituto de Catálisis y Petroleoquímica, CSIC, Spain, (2) ITQB, Universidade Nova de Lisboa, Oeiras, Portugal, (3) Biomedical Science, Faculty of Health and Society, Malmö University, Malmö. Sweden, (4) Instituto IMDEA Materiales, Madrid, Spain. *lead presenter

**11:30** **The role of spin degrees of freedom in manipulating the reactivity of a metal surface containing 3d transition metals** — I 16.2
Satadeep Bhattacharjee and Seung Cheol Lee
Indo Korea Science and Technology Center, Bangalore, India. Center for Electronic Materials, Korea Institute of Science and Technology (KIST)

**11:45** **Catalyst Surfaces for Energy Conversion – In-situ Studies of Electrochemical driven Nanoparticle Exsolution** — I 16.3
R. Rameshan, L. Lindenthal, F. Schrenk, T. Ruh, A. Nenning, A.K. Opitz, C. Rameshan
Institute of Materials Chemistry, TU Wien, Austria, Institute of Chemical Technologies and Analytics, TU Wien, Austria

**12:00** **Discussion**

**12:15** **Closing**

# SYMPOSIUM J

## Future electrochemical energy storage materials: from nanoscience to device integration and real environment application

*Symposium Organizers :*

Adélio MENDES, Faculdade de Engenharia da Universidade do Porto

Carlos PONCE DE LEON ALBARRAN, University of Southampton

Cristina FLOX, Institut de Ciencia de Materials de Barcelona, CSIC

Olivier CROSNIER, Université de Nantes

Volker PRESSER, Leibniz Institut für Neue Materialien GmbH

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### Supercapacitor : Olivier Crosnier

**09:00** INV **Tracking ion fluxes in electrodes for energy storage applications** **J 1.1**
Patrice SIMON
1. Université Toulouse-3 Paul Sabatier, CIRIMAT Laboratory, Toulouse, France 2. RS2E, FR CNRS 3459, F-31062 Toulouse, France E-mail address: simon@chimie.ups-tlse.fr

**09:30** INV **Microsupercapacitors: between a rock and a hard place** **J 1.2**
Thierry Brousse1,2, Jean Le Bideau1,2 and Christophe Lethien2,3
1. Institut des Matériaux Jean Rouxel (IMN), CNRS UMR 6502 – Université de Nantes, 2 rue de la Houssinière BP32229, 44322 Nantes cedex 3, France 2. Réseau sur le Stockage Electrochimique de l'Energie (RS2E), CNRS FR 3459, 33 rue Saint Leu, 80039 Amiens Cedex, France 3. Institut d'Electronique, de Microélectronique et de Nanotechnologies (IEMN), Université de Lille, CNRS, Centrale Lille, ISEN, Université de Valenciennes, UMR 8520 - IEMN, F-59000 Lille, France

**10:00** **Developpement of polysiloxane based polymer electrolyte for application in solid state micro-supercapacitors** **J 1.3**
Mathieu Deschanels(1), Marc Dietrich(2,3), Pascale Gentile(3), Saïd Sadki(2), Cristina Iojoiu(1) et Fannie Alloin(1)
1) Univ. Grenoble Alpes, CNRS, Grenoble INP LEPMI, 38000 Grenoble, France
(2) Univ. Grenoble Alpes, CEA, CNRS, IRIG-SyMMES, 38000 Grenoble, France
(3) Université Grenoble Alpes, CEA-Grenoble, IRIG-DEPHY-PHELIQS-SINAPS, F-38000 Grenoble, France

**10:15** **Asymmetric VN // RuN micro-supercapacitors based on sputtered metal nitride films** **J 1.4**
Khac Huy Dinh (1 2 3), Kevin Robert (1 3), Florent Blanchard (2), Marielle Huvé (1 2), Pascal Roussel (1 2), Christophe Lethien (1 3 4)
1 Institut d'Electronique, de Microélectronique et de Nanotechnologies, Université de Lille, CNRS, Centrale Lille, Université Polytechnique Hauts-de-France, UMR 8520 - IEMN, F-59000 Lille, France 2 Unité de Catalyse et de Chimie du Solide (UCCS), Université de Lille, CNRS, Centrale Lille, Université d'Artois, UMR 8181 – UCCS, F-59000 Lille, France 3 Réseau sur le Stockage Electrochimique de l'Energie (RS2E), CNRS FR 3459, 33 rue Saint Leu, 80039 Amiens Cedex, France
4 Institut Universitaire de France (IUF)

**10:30** **Discussion**

**10:45**

**11:00** **Decorating porous current collectors with ALD RuOx for supercapacitor applications** **J 1.5**
Sakeb Hasan Choudhury, Guillaume Vignaud, Botayna Bounor, Jensheer Shamsudeen Seenath, Pascal Dubreuil, David Bourrier and David Pech
Sakeb Hasan Choudhury: Botayna Bounor: Jensheer Shamsudeen Seenath: Pascal Dubreuil: David Bourrier: and David Pech LAAS-CNRS, Université de Toulouse, CNRS, 7 avenue du colonel Roche, Toulouse 31400, France. Guillaume Vignaud Université Bretagne Sud, 2 rue Coat Saint-Haouen, BP 92116 Lorient, France

**11:15** **Single walled-carbon nanotube electrodes boosted by iodonium salts for electrochemical capacitors** **J 1.6**
Maciej Tobis*(1), Anetta Płatek-Mielczarek(1), Justyna Piwek(1), Łukasz Przypis(2), Dawid Janas(2), Elżbieta Frąckowiak(1)
(1) Poznan University of Technology, Institute of Chemistry and Technical Electrochemistry, 60 – 965 Poznań, Berdychowo 4, Poland, (2) Silesian University of Technology, Faculty of Chemistry, 44 – 100 Gliwice, B. Krzywoustego 4, Poland
* lead presenter

**11:30** **Nitrogen-doped graphene matrix decorated with Sn particles as negative electrode for high performance lithium-ion capacitors** **J 1.7**
Miguel Granados-Moreno*(1)(2), Gelines Moreno-Fernández(1), Rosalía Cid(1), Juan Luis Gómez Urbano(1)(2) and Daniel Carriazo(1)(3).
(1)Centre for Cooperative Research on Alternative Energies (CIC energiGUNE), Basque Research and Technology Alliance (BRTA), Alava Technology Park, Albert Einstein 48, 01510 Vitoria-Gasteiz, Spain. (2)Universidad del País Vasco, UPV/EHU, 48080 Bilbao, Spain (3)IKERBASQUE, Basque Foundation for Science, 48013 Bilbao, Spain



**11:45** **Discussion**

**12:00** **LUNCH**

**13:45** INV **Composite electrodes for higher energy supercapacitors: a path towards fit for purpose devices** **J 1.9**
M. F. Montemor
Centro de Química Estrutural, Institute of Molecular Sciences, Departamento de Engenharia Química Instituto Superior Técnico, Universidade de Lisboa, Av. Rovisco Pais 1049 001 Lisboa, Portugal

**14:15** **Synergistic Contributions of Two Magnetic Elements for Improving the Performance of Magnetic Supercapacitors** **J 1.10**
Joyanti Halder, Ananya Chowdhury, Puja De, Sakshi Kansal, Surbhi Priya, Amreesh Chandra
Indian Institute of Technology, Kharagpur, Department of Physics, Indian Institute of Technology, Kharagpur, Department of Physics, Indian Institute of Technology, Kharagpur, Department of Physics, Indian Institute of Technology, Kharagpur, School of energy science and engineering, Indian Institute of Technology, Kharagpur, School of energy science and Engineering, Indian Institute of Technology, Kharagpur, Department of Physics

**14:30** **Sustainable, non-volatile supercapacitors for photo-supercapacitors applications** **J 1.11**
Nilanka M. Keppetipola* (1), G. R. A Kumara (2), Marie-Anne Dourges (1), Céline Olivier (1), Thierry Toupance (1), Ludmila Cojocaru (1)
(1) The University of Bordeaux, Institute of the Molecular Science, 351 Cours de la Libération F-33405 Talence Cedex, France (2) National Institute of Fundamental Studies, Hantana Road, 20000 Kandy, Sri Lanka

**14:45** **Discussion**

### 1 - Electrodes for energy storage : Cristina Flox

**16:30** **Silicon/Graphene Composite for Electrochemical Energy Storage** **J 2.4**
Farjana J. Sonia*, Golam Haider, Martin Müller, Milan Bousa, Antonín Fejfar, Martin Kalbáč, Otakar Frank
Farjana J. Sonia, Golam Haider, Milan Bousa, Martin Kalbáč, Otakar Frank - J. Heyrovsky Institute of Physical Chemistry of the AS CR, v.v.i., Dolejskova 2155/3, 182 23 Prague 8, Czech Republic, Martin Müller, Antonín Fejfar - FZU-Institute of Physics of the Czech Academy of Sciences, 16200 Prague 6, Czech Republic

**16:30** **Electrochemical studies on Cs-functionalized carbon nanotubes** **J 2.5**
E.I.Ionete1 , S.M. Iordache2 ,3, A.M. Iordache2 ,3, I. Stamatin3, E. Tanasa4, V. Barna5, I. C.Vasiliu2, M.Elisa2, I. Chilibon2, S. Caramizoiu3,6, C.E.A. Grigorescu2
1National R&D Institute for Cryogenics and Isotopic Technologies – ICSI Rm.Valcea, 4 Uzinei Str. RM Valcea, 240050, Valcea, Romania. 2National Institute for Research and Development in Optoelectronics-INOE 2000,Optospintronics Department, 409 Atomistilor, 077125, Magurele Romania 3University of Bucharest, Faculty of Physics, 3Nano-SAE Research Center, 405 Atomistilor, P.O. Box MG-38, 077125, Magurele, Romania. 4Politehnica University of Bucharest, 313 Splaiul Independenței, Bucharest, Romania. 5University of Bucharest, Faculty of Physics, 405 Atomistilor, 077125, Magurele, Romania 6National Institute for R&D in Microtechnologies IMT-Bucharest, 126A Erou Iancu Nicolae Str., Voluntari, 077190, Romania

**16:30** **Porous cobalt oxides nanostructures electrodeposited on graphene electrode for energy storage applications** **J 2.6**
H. Ghannam*(1,2), O.Elkhouja (1,3), T. Tite (1), C. Ungureanu(4), M. Buga(4), A. A. Zaulet(4), E. Matei(1), C. C. Negrilă(1), A.C. Galca(1), G. Stan(1), A. Chahboun(2)
(1) National Institute of Materials Physics, RO-077125 Magurele, Romania (2) Abdelmalek Essaadi University, FSTT, Thin Films and Nanomaterials Lab., 90000 Tangier, Morocco (3)Laboratory of Materials and Subatomic Physics, Faculty of Sciences, Ibn Tofail University, Campus Universitaire, 14000 Kenitra, Morocco
(4) National Research and Development Institute for Cryogenics and Isotopic Technologies - ICSI Rm. Valcea, Uzinei Street no. 4, PO Box Râureni 7, 240050, Râmnicu Vâlcea, Romania

## Tuesday may 31

### Electrolytes for batteries : Olivier Crosnier

**09:00** INV **Ionic liquids electrolytes: industrial challenges from lab to market** — J 3.1
Sébastien FANTINI, Rongying LIN, Anaïs FALGAYRAT, Pauline RULLIERE, Pierre-Alexandre MARTIN, Tom GOUVEIA, François MALBOSC
Solvionic SA, Chemin de la Loge, CS 27813, Toulouse, 31078, France

**09:30** **Ionic liquids as electrolytes for high voltage Li-ion batteries within the Si-Drive Project: links between the physical properti** — J 3.2
Palumbo, O. (1), Sarra, A. (1), Cimini, A.(1), Brutti. S. (1,2), Appetecchi, G.B.(3), Simonetti, E.(3), Maresca, G.(3), Fantini, S.(4), Lin, R.(4), Falgayrat, A.(4), Paolone, A.(1).
(1) Consiglio Nazionale delle Ricerche, Istituto dei Sistemi Complessi,Piazzale Aldo Moro 5, 00185 Rome, Italy (2) Sapienza University of Rome, Department of Chemistry, Piazzale Aldo Moro 5, 00185 Rome, Italy (3) Agenzia Nazionale per le Nuove Tecnologie, l'Energia e lo Sviluppo Economico Sostenibile (ENEA), Materials and Physicochemical Processes Technical Unit (SSPT-PROMAS- MATPRO), Via Anguillarese 301, 00123 Rome, Italy (4) Solvionic SA, 11 Chemin des Silos, 31100 Toulouse, France

**09:45** **Structural and dynamic properties of pyrrolidinium-based ionic liquid - Li electrolyte solutions** — J 3.3
Michele A. Salvador, Elena Degoli, Alice Ruini, Rita Magri
University of Modena and Reggio Emilia, University of Modena and Reggio Emilia, University of Modena and Reggio Emilia, University of Modena and Reggio Emilia, University of Modena and Reggio Emilia

**10:00** **Long Cycle Life Li-ion Batteries Using Non-flammable Gel Electrolyte Prepared Via In-situ Crosslinking** — J 3.4
Cluzeau Benoît, Dedryvere Rémi, Dumont Erwan, Gillot Stephane, Jordy Christian, Pavlenko Ekaterina
IPREM laboratory, IPREM laboratory, Saft compagny, Saft compagny, Saft Compagny, Saft compagny.

**10:15** **Low resisitance at interface of [LiG4][TFSA] ionic liquid and LiCoO2(001) positive electrode by introducing Li3PO4 buffer layer** — J 3.5
Jun Deng, Kazunori Nishio, Yuki Watanabe, Kurei Edamura, Ryota Shimizu, and Taro Hitosugi
Tokyo Institute of Technology, Japan

**10:30** **Discussion**

**10:45**

**11:00** **Searching better performing methods to calculate the electrochemical stability of ionic liquids** — J 3.6
A. Paolone (1), S. Brutti (1,2), S. Di Muzio (1)
(1) Consiglio Nazionale delle Ricerche, Istituto dei Sistemi Complessi, Rome, Italy, (2) Sapienza Università di Roma, Dipartimento di Chimica, Rome, Italy

**11:15** **Micro-spectroscopic investigation of the SEI on amorphous Si electrodes operating in ionic liquid electrolytes** — J 3.7
N. Carboni,(a) S. Brutti,(a),(b),(c) O. Palumbo,(a) G.B. Appetecchi,(d) G. Maresca,(d) H. Geaney,(e) K. M. Ryan,(e) F. Capitani,(f) S. Fantini,(g) R. Lin,(g) P.-A. Martin,(g) A. Paolone(a)
(a) ISC-CNR, UOS Sapienza, Piazzale A. Moro 5, 00185 Roma (IT), (b) Dip. Chimica Un. Roma La Sapienza, P.le Aldo Moro 5, 00185 Roma (IT), (c) GISEL—Centro di Riferimento Nazionale per i Sistemi di Accumulo Elettrochimico di Energia, INSTM, via G. Giusti 9, 50121 Firenze (IT), (d) ENEA, Materials and Physicochemical Processes Technical Unit (SSPT-PROMAS- MATPRO), Via Anguillarese 301, 00123 Roma (IT), (e) Department of Chemical Sciences, University of Limerick (IE), (f) Synchrotron Soleil, BP 48, 91192 Gif-sur-Yvette (FR), (g) SOLVIONIC, 11 Chemin des Silos, 31100 Toulose (FR)

**11:30** **Eutectogel and ionogel hybrid solid electrolytes for rechargeable batteries** — J 3.8
A. Hardy, J. Mercken, A.-S. Kelchtermans, B. Joos, D. De Sloovere, M.K. Van Bael UHasselt, Institute for Materials Research, imec division imomec, Energyville, Agoralaan building D, 3590 Diepenbeek, Belgium

**12:00** **Discussion**

**12:15** **LUNCH**



### Redox Flow Batteries : Cristina Flox

**15:00** INV **Sustainable Carbon Fibres for the Next Generation of Redox Flow Batteries** — J 4.1
Ana Belen Jorge Sobrido*, Rhodri Jervis, Michael W Thielke, Maria Crespo Ribadeneyra
Associate Professor in Sustainable Energy Materials, UKRI Future Leaders Fellow School of Engineering and Materials Science, Queen Mary University of London *a.sobrido@qmul.ac.uk

**15:30** **Solid boosted flow batteries: Operation from the point of view of thermodynamics and kinetics of charge transfer between the re** — J 4.2
M. Moghaddam1 and P. Peljo1
1. Research group of Battery Materials and Technologies, Faculty of Technology, University of Turku, 20500 Finland pekka.peljo@utu.fi / mahdi.moghaddam@utu.fi

**15:45** **A long cycle life zinc-iodide flow battery enabled by a low cost electrolyte additive** — J 4.3
M. Chakraborty1,2, T. Andreu1,3, M. Guc1, J.R. Morante1,3, S. Murcia-López1
1 Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, Sant Adrià de Besós, 08930, Spain 2 Universitat Autonoma de Barcelona (UAB), Plaça Cívica, Bellaterra, 08193, Spain 3 University of Barcelona (UB), Martí i Franquès 1, Barcelona, 08020, Spain e-mail address: mchakraborty@irec.cat

**16:00** **Modelling electrolyte degradations in aqueous redox flow batteries** — J 4.4
Loïs BRIOT(a), Quentin CACCIUTTOLO(a), Martin PETIT(a), Marie-Cécile PERA(b)
(a) IFP Energies Nouvelles, Rond-Point de l'échangeur de Solaize, F-69360 Solaize, France. (b) FEMTO-ST Institute, FCLAB, Univ. Bourgogne Franche-Comté, CNRS, F-90000 Belfort, France.

**16:15** **Discussion**

**16:30** INV **Recent works on the membrane for non-aqueous redox flow battery** — J 4.5
Yongdan Li a,b,c*
a) Department of Chemical and Metallurgical Engineering, Aalto University, Kemistintie 1, FI-00076 Aalto, Finland b) State Key Laboratory of Chemical Engineering (Tianjin University), Tianjin Key Laboratory of Applied Catalysis Science and Technology, School of Chemical Engineering and Technology, Tianjin University, Tianjin 300072, China c) Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin 300072, China E-mail of corresponding author: yongdan.li@aalto.fi

**17:00** INV **Material designs and testings of organic redox flow batteries based on multi-electron quinone molecule** — J 4.6
Puiki Leung
School of Energy and Power Engineering, Chongqing University, ChongQing, China

**17:30** **Novel Organic Materials for Non-Aqueous Redox Flow Batteries: Implementation of Triarylamine and Phenazine Core Structures** — J 4.7
Romadina E.I.[1], Stevenson K.J.[1]
[1] Skolkovo Institute of Science and Technology, Bolshoy Boulevard 30, bld. 1, Moscow, Russia

**17:45** **Discussion**

**Wednesday june 1**

## Lithium ion batteries : Cristina Flox

**09:00** INV **Digitalization of Battery Manufacturing Processes: From Fundamentals to Accelerated Optimization** — J 5.1

Alejandro A. Franco
Laboratoire de Réactivité et Chimie des Solides (LRCS), CNRS UMR 7314, Université de Picardie Jules Verne, Hub de l'Energie, 15 Rue Baudelocque, 80039 Amiens, France,Réseau sur le Stockage Electrochimique de l'Energie (RS2E), Fédération de Recherche CNRS 3459, Hub de l'Energie, 15 Rue Baudelocque, 80039 Amiens, France, ALISTORE-European Research Institute, Fédération de Recherche CNRS 3104, Hub de l'Energie, 15 Rue Baudelocque, 80039 Amiens, France, Institut Universitaire de France, 103 Boulevard Saint-Michel, 75005 Paris, France

**09:30** **In operando chemical and structural imaging of battery materials using correlative SEM and SIMS** — J 5.2

Cressa, L.* (1), Sun, Y. (2), Kopljar, D. (2), Burkhardt, C. (3), De Castro, O. (1), Gerard, M. (1), Wirtz, T. (1), Eswara, S. (1)
(1) Advanced Instrumentation for Nano-Analytics (AINA), MRT Department, Luxembourg Institute of Science and Technology, 41, rue du Brill, L-4422 Belvaux, Luxembourg, (2) German Aerospace Center (DLR), Institute of Engineering Thermodynamics, Pfaffenwaldring 38-40, 70569 Stuttgart, Germany, (3) Natural and Medical Sciences Institute (NMI) at the University of Tübingen, Markwiesenstr. 55, 72770 Reutlingen, Germany

**09:45** **Enabling Layer-Structured Si-Anodes for usage in Li-ion Batteries by Controlled Kirkendall Void Formation** — J 5.3

Sahar Lausch, Andreas Krause-Bader, Robert Gorgas, Toni Buttler, Susan Fülle, Marcel Neubert
Sahar Lausch, Andreas Krause-Bader, Robert Gorgas, Susan Fülle, Marcel Neubert are with the NORCSi GmbH Battery Company, Weinbergweg 23, D-06120 Halle, Germany. Toni Buttler is with the Interdisciplinary Centre for Materials Sciences (IZM), Martin Luther University Halle-Wittenberg, D-06120 Halle, Germany.

**10:00** **Unveiling the (electro-)chemical interface degradation upon cycling of NCM622/LPSCl solid-state batteries** — J 5.4

Lelotte, B.* (1), Vaz, C. A. F. (2), Pelé, V. (3), Jordy, C. (3), Gubler, L. (1) & El Kazzi, M. (1)
(1) Electrochemistry Laboratory, Paul Scherrer Institut, Villigen PSI, Switzerland (2) Swiss Light Source, Paul Scherrer Institut, Villigen PSI, Switzerland (3) SAFT, Direction de la Recherche, Bordeaux, France

**10:15** **Improved electrochemical performance of a high voltage spinel LiNi0.5Mn1.5O4 modified by an Al rich coating** — J 5.5

Gwenaëlle COURBARON (1,2), Nathalie DELPUECH (1,3,4), Emmanuel PETIT (2,3,4), Jon SERRANO (2,4,5), Dany CARLIER (2,3,4), Jacob OLCHOWKA (2,3,4), Christine LABRUGERE (6), Cyril AYMONIER (2,3), Laurence CROGUENNEC (2,3,4)
(1) Renault SAS, Technocentre, 1 avenue du golf, 78280 Guyancourt, France (2) Univ. Bordeaux, CNRS, Bordeaux INP, ICMCB UMR 5026, F-33600 Pessac, France (3) RS2E, Réseau Français sur le Stockage Electrochimique de l'Energie, FR CNRS 3459, France (4) ALISTORE-ERI European Research Institute, FR CNRS 3104, 80039 Amiens Cedex France (5) CIC Energigune, Albert Einstein 48, Parque Tecnologico de Alava, Miñano 01510, Spain (6) PLACAMAT, UMS 3626, CNRS Université Bordeaux, 33600 Pessac, France

**10:30** **Discussion**

**10:45**

**11:00** **Multiscale investigation of sulfide based solid electrolyte** — J 5.6

Adrien fauchier-Magnan1, Patrice Perrenot2, Oscar Defoor3, Emmanuelle Suard4, François Fauth5, Claire Villevieille1
1. Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, Grenoble INP*, LEPMI, 38000 Grenoble, France 2. CEA- LITEN, 17 rue des Martyrs, F-38000 Grenoble, France 3. CEA, IRIG Institute, 17 rue des Martyrs, F-38000 Grenoble, France 4. ILL, rue des Martyrs, F-38000 Grenoble, France 5. ALBA synchrotron, Barcelona, Spain



**11:15** **Unraveling the role of counter electrode in the analysis of the nucleation overpotential in lithium metal batteries** — J 5.7

Abdolkhaled Mohammadi Laure Monconduit Lorenzo Stievano Reza Younesi
1 ICGM, University Montpellier, CNRS, Montpellier, France 2 Department of Chemistry – Ångström Laboratory, Uppsala University, Box 538, 75121 Uppsala, Sweden 3 Alistore-ERI, CNRS FR, Amiens 3104, France 4 RS2E, CNRS, Amiens, France

**11:30** **Hybrid materials based on carbon-metal sulphide nanocrystals as electrodes for rechargeable batteries** — J 5.11

María Bernechea1,2,3,4*, Sergio Aina1,2, M. Pilar Lobera1,2,3
1 Instituto de Nanociencia y Materiales de Aragón (INMA) CSIC-Universidad de Zaragoza, Zaragoza, Spain 2 Departamento de Ingeniería Química y Tecnologías del Medio Ambiente, Universidad de Zaragoza, Zaragoza, Spain 3 Networking Biomedical Research Centre of Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Madrid, Spain 4 ARAID, Zaragoza, Spain * mbernechea@unizar.es

**11:45** **Cross-section nano-Auger analysis to reveal bulk chemical/morphological information in composites for energy storage** — J 5.9

Madec, L.*(1,2), Ledeuil, J.B.(1), Tang, C.(2,3), Giaume, D.(2,4), Guerlou-Demourgues, L.(2,3), Monconduit, L.(2,5), Martinez, H.(1,2)
(1) Universite de Pau et des Pays de l'Adour, E2S UPPA, CNRS, IPREM, Pau, France, (2) Réseau sur le Stockage Electrochimique de l'Energie, CNRS FR3459, Amiens, France, (3) Bordeaux, Bordeaux INP, ICMCB UMR5026, F-33600 Pessac, France, (4) Chimie-ParisTech, PSL Research University, CNRS, IRCP, 75005 Paris, France, (5) ICGM, Université de Montpellier, CNRS, Montpellier, France

**12:00** **Discussion**

**12:15** **Lunch**

**15:00** **Vanadium oxides and zinc oxide thin films for energy storage applications: study of their combination and synergy with graphene** — J 5.10

T. Tite*(1), H. Ghannam(1,2), O.Elkhouja(1,3), C. Ungureanu(4), M. Buga(4), A. A. Zaulet(4), I. Stavarache(1), E. Matei(1), M. Y. Zaki(1), C. C. Negrila(1), A.C. Galca(1), G.E. Stan(1), A. Galatanu(1), M-C. Bartha(1), M. Baibarac(1), A. Chahboun(2)
(1) National Institute of Materials Physics, RO-077125 Magurele, Romania (2) Abdelmalek Essaadi University, FSTT, Thin Films and Nanomaterials Lab., 90000 Tangier, Morocco (3) Laboratory of Materials and Subatomic Physics, Faculty of Sciences, Ibn Tofail University, Campus Universitaire, 14000 Kenitra, Morocco (4) National Research and Development Institute for Cryogenics and Isotopic Technologies - ICSI Rm. Valcea, Uzinei Street no. 4, PO Box Râureni 7, 240050, Râmnicu Vâlcea, Romania

**15:15** **A cost and performance analysis of organic battery materials** — J 5.8

Innocenti, A. (1, 2)*, Chen, Z. (1, 2) & Passerini, S. (1, 2)
1) Helmholtz Institute Ulm (HIU), Germany 2) Karlsruhe Institute for Technology (KIT), Germany

**15:30** **Anodic sulfate adsorption on vicinal Cu(111) electrode surfaces** — J 5.12

Gianlorenzo Bussetti1, Claudia Filoni*1, Lamberto Duò1, Franco Ciccacci1, Klaus Wandelt2
1) Department of Physics, Politecnico di Milano (Italy) 2) Institute of Physical and Theoretical Chemistry, Bonn University (Germany)

**15:45** **Investigation of the thermodynamic properties of new full-Heusler Co2Ti Pb by using first principles calculations** — J 5.13

Ali Zitouni, Gherici Remil, Bouabdellah Bouadjemi, Samira Cherid, Yamina Sefir, Mohamed Houari, Mohamed Matougui, Tayeb Lantri and Samir Bentata.
Laboratory of Technology and of Solids Properties / Faculty of Sciences and Technology, BP227 AbdelhamidIbn Badis University, 27000 Mostaganem, Algeria

**16:00** **Discussion**

**16:15**

## 2 - Materials for electrochemical applications : -

**16:30** **Electrodeposited Pt NPs on highly ordered TiO2 nanotubes for photocatalytic application: degradation of amido black dye** **J J.5.1**

M.Azziz. HAJJAJI1, A.HAJJAJI1*,A.A.ASSADI2 and B. BESSAIS1
1 Laboratoire de Photovoltaïque, Centre de Recherches et des Technologies de l'Energie, Technopole de Borj-Cédria, BP 95, 2050 Hammam-Lif, Tunisia. 2 Univ. Rennes, Ecole Nationale Supérieure de Chimie de Rennes, CNRS, ISCR-UMR 6226, F-35000 Rennes, France

**16:30** **Impact of annealing ZrO2 nanotubes on photocatalytic degradation of pollutants** **J J.5.2**

Safa Jemai1,4, Kaouther Gueddana1, Khaled Trabelsi1, Anouar Hajjaji1*, Mosbah Amlouk3, Bernabé Mari Soucase4, Sami Rtimi2, Brahim Bessais1
1Laboratoire de Photovoltaïque, Centre de Recherches et des Technologies de l'Energie, Technopole de Borj-Cédria, BP 95, 2050 Hammam-Lif, Tunisia 2 Ecole Polytechnique Fédérale de Lausanne (EPFL), EPFL-STI-IMX-LTP, Station 12, CH-1015, Lausanne, Switzerland 3Laboratory of Nanomaterials, Nanotechnology and Energy (L2NE),Faculty of Sciences of Tunisia, El Manar University,2092 Tunis, Tunisia 4 School of Design Engineering, Departamento de Fisica Aplicada, Universitat Politecnica de Valencia, Cami de Vera, Spain

**16:30** **Stable PbS-doped Ta2O5 nanotubes prepared by Silar method for photocatalytic dye degradation.** **J J.5.3**

Ines Khemissi a , Khaled Trabelsi a , Abdeslem Kouki b , Anouar Hajjaji *a , Sami Rtimi c and Brahim Bessais a
(a) Laboratoire de Photovoltaïque, Centre de Recherches et des Technologies de l'Energie, BP 95, 2050 Hammam-Lif, Tunisia (b) Université de Carthage, Faculté des Sciences de Bizerte, LR01ES15, Laboratoire de Physique des Matériaux: Structure et Propriétés, 7021 Zarzouna Bizerte, Tunisie (c) Ecole Polytechnique Fédérale de Lausanne (EPFL), EPFL-STI-IMX-LTP, Station 12, CH-1015, Lausanne, Switzerland

**16:30** **Electrochemical Performance of Porous Carbon / One-Dimensional Polypyrrole Electrodes for Water Desalination** **J J.5.4**

Vagenas M.* (1,2), Plakantonaki N. (1), Giannakopoulou T. (1), Todorova N. (1), Papailias I. (1), Argirusis C. (2), Trapalis C. (1) * lead presenter
(1)Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos", 15341, Greece (2) School of Chemical Engineering, National Technical University of Athens, 15773, Greece





## Post Lithium-ion batteries : Cristina Flox

**09:00** INV **Semi solid lithium/oxygen flow batteries: challenges and promises** **J 6.1**

Francesca Soavi1,2,3,4*, Alessandro Brilloni1,2,3,4, Francesca De Giorgio3,4,5, Federico Poli1,2,3,4
1 Department of Chemistry "Giacomo Ciamician", Alma Mater Studiorum Università di Bologna, Via Selmi 2, Bologna 40126, Italy 2 ENERCube, Centro Ricerche Energia, Ambiente e Mare, Centro Interdipartimentale per la Ricerca Industriale Fonti Rinnovabili, Ambiente, Mare ed Energia (CIRI -FRAME), - Alma Mater Studiorum University of Bologna, Viale Ciro Menotti, 48, 48122 Marina di Ravenna RA (RA) 3 BETTERY Srl, Via C. Pisacane 56, Massafra 74016, Italy 4 National Reference Center for Electrochemical Energy Storage (GISEL) - INSTM, Via G. Giusti 9, 50121 Firenze (Italy) 5 Consiglio Nazionale delle Ricerche, Istituto per lo Studio dei Materiali Nanostrutturati (CNR-ISMN), via Piero Gobetti 101, Bologna, 40129, Italy

**09:30** **Investigation of Zinc-based spinels & (pyro)phosphates for Zn-ion and Zn-air batteries** **J 6.2**

Deepa Singh* (1), A Baby (1,2), & Prabeer Barpanda (1)
(1) Indian Institute of Science, Bangalore, India, (2) University of Illinois at Urbana Champaign (UIUC), IL, USA.

**09:45** **Nanostructured zinc manganite thin films as cathodes for aqueous zinc-ion batteries.** **J 6.3**

Macrelli, A.*(1), Casari, C.S.(1), Li Bassi, A.(1), Russo, V.(1) & Bozzini, B.(2).
(1) Micro- and Nanostructured Materials Lab (NanoLab), Department of Energy, Politecnico di Milano, 20133 Milano, Italy, (2) Battery Materials Engineering Laboratory (BMEL), Department of Energy, Politecnico di Milano, 20156 Milano, Italy. * lead presenter

**10:00** **Hydrothermally Synthesized V2O5 as an Advanced Cathode Material for Low-Cost Aqueous Aluminum Ion Battery** **J 6.4**

Puja De, Joyanti Halder, Surbhi Priya, Amreesh Chandra
Department of Physics, Department of Energy Science and Engineering, Indian Institute of Technology Kharagpur, Kharagpur-721302, India

**10:15** **Understanding of the Solid Electrolyte Interphase Formed in Ca Metal Batteries** **J 6.5**

Bodin C.* (1) (2), Forero-Saboya J.D. (1), Yousef I. (3), Davoisne, C. (2) (4), Dedryvère R. (2) (5) & Ponrouch A. (1) (2).
(1) Institut de Ciència de Materials de Barcelona, ICMAB-CSIC, Campus UAB, 08193 Bellaterra, Spain (2) ALISTORE - European Research Institute - CNRS FR 3104 - Hub de l'Energie - 80039 Amiens - France (3) MIRAS Beamline, ALBA Synchrotron Light Source, Carrer de la Llum 2-26, 08290 Cerdanyola del Vallès, Spain (4) Laboratoire de Réactivité et Chimie des Solides, Université de Picardie Jules Verne, CNRS UMR7314, 33 rue Saint Leu, 80039 Amiens, France (5) IPREM, E2S-UPPA/CNRS/ Université de Pau & Pays de l'Adour, 64000 Pau, France

**10:30** **Discussion**

**10:45**

**11:00** **From electrochemical to failure mechanisms in KxVPO4F1-yOy high voltage positive electrodes for K-ion batteries** **J 6.6**

Romain Wernert, Antonella Iadecola, François Fauth, Laure Monconduit, Dany Carlier, Laurence Croguennec
Université de Bordeaux, CNRS, Bordeaux INP, ICMCB UMR CNRS #5026, Pessac, F-33600, France, RS2E, Réseau Français sur le Stockage Electrochimique de l'Energie, FR CNRS #3459, Amiens F-80039 Cedex 1, France, CELLS-ALBA synchrotron, E-08290, Cerdanyola del Vallès, Barcelona, Spain, ICGM, Univ. Montpellier, CNRS, Montpellier, France, Université de Bordeaux, CNRS, Bordeaux INP, ICMCB UMR CNRS #5026, Pessac, F-33600, France,Université de Bordeaux, CNRS, Bordeaux INP, ICMCB UMR CNRS #5026, Pessac, F-33600, France

**11:15** **Real-time imaging of Na+ reversible intercalation in "Janus" graphene stacks for battery applications** **J 6.7**

Vincenzo Palermo1,3 Jinhua Sun1, Matthew Sadd1, Philip Edenborg1, Henrik Grönbeck1, Peter Thiesen2, Zhenyuan Xia1, Vanesa Quintano1, Ren Qiu1, Aleksandar Matic1
1Chalmers University of Technology, Göteborg, Sweden. 2Accurion GmbH, Stresemannstraße 30, Göttingen 37079, Germany. 3Institute of Organic Synthesis and Photoreactivity (ISOF), National Research Council of Italy (CNR), Bologna, Italy.

**11:30** **Stoichiometry of electrochemical solvent co-intercalation reactions and new sodium-ion electrolyte for graphite anodes** **J 6.8**

Gustav Åvall, Youhyun Son, Guillermo Alvarez Ferrero, Knut Arne Janßen, Philipp Adelhelm
Institut für Chemie, Humboldt Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany,Institut für Chemie, Humboldt Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany,Institut für Chemie, Humboldt Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany,Institut für Chemie, Humboldt Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany,Institut für Chemie, Humboldt Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany, Joint Research Group Operando Battery Analysis, Helmholtz-Zentrum Berlin, Hahn-Meltner-Platz 1, 14109 Berlin, Germany

**11:45** **Ab initio study of external electric field effects on Na adsorption and uptake at TiO2 anatase surfaces** **J 6.9**

Fasulo, F. *(1), Massaro, A. (1), Muñoz-García, A.B. (2) & Pavone, M. (1).
(1) Department of Chemical Sciences, University of Naples Federico II, Via Cintia 21, 80126 Napoli, Italy (2) Department of Physics “E. Pancini”, University of Naples Federico II, Via Cintia 21, 80126 Napoli, Italy * lead presenter

**12:00** **Discussion**

**12:15** **Lunch**

**Post Lithium-ion batteries : Olivier Crosnier**

**15:00** **Exploration of spray drying prepared mixed polyanionic NaFe2PO4¬(SO4¬)2 battery insertion material** **J 6.10**

Lochab, S.*(1), Singh, D.(2), Jayanthi, K.(3) Navrotsky, A.(3), Ahuja, R.(2) & Barpanda, P.(1)
(1) Indian Institute of Science, Bangalore, India, (2) Uppsala University, Upsala, Sweden, (3) Arizona State University, Arizona, United States,

**15:15** **Stable cycling of sodium metal anodes enabled by a sodium/silica-gel host** **J 6.12**

A. Petrongari (a), M. Tuccillo (a), A. Latini (a), S. Brutti (a)
(a) Dipartimento di Chimica, Università di Roma La Sapienza, P.le Aldo Moro 5, 00185 Roma (Italy)

**15:30** **Oxygen redox activity in P2-type layered oxides as high-energy cathodes for Na-ion battery** **J 6.13**

Arianna Massaro, Ana Bélen Muñoz-García, Michele Pavone
Department of Chemical Science, University of Naples “Federico II”, Naples, Italy
Department of Physics “E. Pancini”, University of Naples “Federico II”, Naples, Italy

**15:45** **The energy problem solution on base of the nuclear fusion reactions realization in frame of radiation fluxes waveguide-resonance** **J 6.14**

Egorov E.V.(1,2,3), Egorov V.K.(1)
(1) Institute of Microelectronics Technology Russian Academy of Science (IMT RAS)
(2) Institute of Radio Engineering and Electronics Russian Academy of Science (IRE RAS) (3) Financial University under the Government of the Russian Federation

**16:00** **Discussion and Closing Remarks**

E-MRS European Materials Research Society

Spring Meeting 2022

May 30 | June 3
Virtual Conference

# SYMPOSIUM K

## Thin film chalcogenide photovoltaic materials

*Symposium Organizers :*


Alex REDINGER, University of Luxembourg

Byungha SHIN, Korea Advanced Institute of Science and Technology (KAIST)

Matthew REESE, NREL

Oana COJOCARU-MIREDIN, RWTH Aachen

Romain CARRON, Empa


Selected papers will be published in a topical issue of Thin Solid Films.

MBE KOMPONENTEN | DR. EBERL

UNIVERSITÉ DU LUXEMBOURG

CAMECA SCIENCE & METROLOGY SOLUTIONS

AMETEK

## Monday may 30

**09:00** **Welcome and Introduction to the Symposium**

### CIGS: Materials & devices I : Dalibor Thomas - Redinger Alex

**09:10** INV **Interface Modification in Chalcopyrite-Based Thin-film Photovoltaic Devices** K 1.1
Shogo Ishizuka
National Institute of Advanced Industrial Science and Technology (AIST)

**09:40** **Wide-gap (Ag,Cu)(In,Ga)Se2 solar cells - Performance leap by an RbF-PDT?** K 1.2
Jan Keller*, Lars Stolt, Olivier Donzel-Gargand and Marika Edoff
Ångström Solar Center, Division of Solar Cell Technology, Uppsala University, 75121 Uppsala, Sweden

**09:55** **(Ag,Cu)(In,Ga)Se2 thin film solar cells with more than 23% bifacial efficiencies under 30% albedo condition** K 1.3
Shih-Chi Yang, Tzu-Ying Lin, Mario Ochoa, Huagui Lai, Ayodhya N. Tiwari, and Romain Carron
(1) Laboratory for Thin Films and Photovoltaics, Empa-Swiss Federal Laboratories for Materials Science and Technology, Ueberlandstr. 129, 8600 Duebendorf, Switzerland: Shih-Chi Yang, Mario Ochoa, Huagui Lai, Ayodhya N. Tiwari, and Romain Carron (2) Department of Material Science, National Tsing Hua University No. 101, Sec. 2, Kuang-Fu Road, Hsinchu 300, Taiwan: Tzu-Ying Lin

**10:10** **Silver alloying of wide-gap sulfide CIGS prepared by metal coevaporation and sulfur annealing for tandem solar cell application** K 1.4
Alexandre Crossay (1), Jackson Lontchi (2), Amelle Rebai (1), Hugo Gloaguen (3), Eugène Bertin (4,5), Olivier Durand (4), Nicolas Barreau (5), Jean-François Guillemoles (1), Negar Naghavi (1), Daniel Lincot (1,2).
(1) CNRS UMR 9006 IPVF, 18 bd Thomas Gobert, 91120 Palaiseau , (2) Institut Photovoltaïque d'Ile-de-France, 18 bd Thomas Gobert, 91120 Palaiseau , (3) Université de Nantes, 44000 Nantes , (4) Université de Rennes, INSA Rennes, CNRS, Institut FOTON - UMR 6082, F-35000 Rennes, France , (5) Université de Nantes, CNRS, Institut des Matériaux Jean Rouxel IMN, UMR 6502, F-44322 Nantes 3, France

**10:25** **Role of Na and Ag in interconnection between chemical composition and electrical properties of grain boundaries in Cu(In, Ga)Se2** K 1.5
Azam Karami(1), Oana Cojocaru-Mirédin*(1), Marcin Morawski(2), Semih Agca(2), Roland Scheer(2) & Heiko Kempa(2).
(1)RWTH Aachen University, Germany, (2)Institution Martin-Luther-Universität Halle-Wittenberg, Germany

**10:40** **Discussion**

**10:50**

### CIGS: materials & devices II : Ishizuka Shogo - Carron Romain

**11:00** **The Challenges and Developments in Light Management for CIGS Solar Cells** K 2.1
A. J. N. Oliveira, J. P. Teixeira, T. S. Lopes, R. F. Alexandre, D. Ramos, J. R. S. Barbosa, K. Oliveira, P. A. Fernandes, P. M. P. Salomé
A. J. N. Oliveira, J. P. Teixeira, T.S. Lopes, R. F. Alexandre, D. Ramos, J. R. S. Barbosa, K. Oliveira, P. A. Fernandes, P. M. P. Salomé INL – International Iberian Nanotechnology Laboratory, Avenida Mestre José Veiga, 4715-330 Braga, Portugal A. J. N. Oliveira, P. A. Fernandes i3N,Departamento de Física da Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal A. J. N. Oliveira, P. M. P. Salomé Departamento de Física, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal T. S. Lopes Imec division IMOMEC (partner in Solliance), Wetenschapspark 1, 3590 Diepenbeek, Belgium T. S. Lopes Institute for Material Research (IMO), Hasselt University (partner in Solliance), Agaangebouw H, Diepenbeek, 3590, Belgium T. S. Lopes EnergyVille 2, Thor Park 8320, 3600 Genk, Belgium R. F. Alexandre, D. Ramos Departamento de Ciência dos Materiais, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Campus de Caparica, 2829-516 Caparica, Portugal P. A. Fernandes, P. M. P. Salomé CIETI, Departamento de Física, Instituto Superior de Engenharia do Porto, Instituto Politécnico do Porto, Porto 4200-072, Portugal



**11:15** **Impact of the RbF post-deposition treatment on the interface between Cu(In,Ga)Se2 and sputter-deposited Ga2O3** K 2.2
E. Pyatenko (1,2), D. Hauschild (2,3,4), R. Steininger (2), D. Hariskos (5), W. Witte (5), M. Powalla (5), C. Heske (2,3,4), and L. Weinhardt (2,3,4)
(1) Laboratory for Applications of Synchrotron Radiation (LAS), Karlsruhe Institute of Technology (KIT), Kaiserstraße 12, 76131 Karlsruhe, Germany (2) Institute for Photon Science and Synchrotron Radiation (IPS), Karlsruhe Institute of Technology (KIT), Hermann-v.-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany (3) Institute for Chemical Technology and Polymer Chemistry (ITCP), Karlsruhe Institute of Technology (KIT), Engesserstraße 18/20, 76128 Karlsruhe, Germany (4) Department of Chemistry and Biochemistry, University of Nevada, Las Vegas (UNLV), 4505 Maryland Parkway, Las Vegas, NV 89154-4003, United States (5) Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), Meitnerstraße 1, 70563 Stuttgart, Germany

**11:30** **A Facile Pathway for Colloidal Nanoparticle Synthesis and Thin-Film Devices Thereof for Reduction in Carbon Impurities** K 2.3
Hayes, D. C.* (1), Agrawal, R. (1)
(1) Davidson School of Chemical Engineering, Purdue University, West Lafayette, IN 47906, USA

**11:45** **Interplay between potassium and copper on epitaxial Cu(In,Ga)Se2 after post-deposition treatment** K 2.4
Evandro Martin Lanzoni, Omar Ramirez, Susanne Siebentritt, Alex Redinger
Department of Physics and Materials Science, University of Luxembourg, Luxembourg

**12:00** **Impact of compositional changes on the quality of the Cu(In,Ga)Se2 absorber in thin-film solar cells** K 2.5
Sinju Thomas1, Wolfram Witte2, Dimitrios Hariskos2, Stefan Paetel2, Chang-Yun Song3, Heiko Kempa3, Nora El-Ganainy4, Daniel Abou-Ras1
1. Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Hahn-Meitner-Platz 1, 14109 Berlin, Germany 2. Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), Meitnerstr. 1, 70563 Stuttgart, Germany 3. Martin-Luther-Universität Halle-Wittenberg, Institut für Physik, Fachgruppe Photovoltaik, von-Danckelmann-Platz 3, 06120 Halle (Saale) 4. Competence Centre Photovoltaics Berlin (PVcomB) / Helmholtz Zentrum Berlin für Materialien und Energie (HZB), Schwarzschildstr. 3, 12489 Berlin, Germany

**12:15** **Discussion**

**12:30**

### Tandems & wide bandgap CIGSe : Sadewasser Sascha - tbd

**14:00** INV **Design and Optimization of Perovskite / CIGS Tandem Solar Cells** K 3.1
Philip Schulz
CNRS, Institut Photovoltaïque d'Île de France (IPVF), UMR 9006, 18 boulevard Thomas Gobert, 91120 Palaiseau, France

**14:30** **The Effect of Absorber Stoichiometry on the Stability of Wide-Gap (Ag,Cu)(In,Ga)Se_2 Solar Cells** K 3.2
Patrick Pearson, Jan Keller, Charlotte Platzer-Björkman.
Uppsala Universitet, Sweden

**14:45** **Chemical and electronic structure profiles of wide-gap (Ag,Cu)(In,Ga)Se2 thin film solar cell absorbers** K 3.3
Donald Valenta (1), Jakob Bombsch (1), Regan G. Wilks (1,3), Natalia Martin (2), Tobias Törndahl (2), Charlotte Platzer Björkman (2), Marika Edoff (2), and Marcus Bär (1,3,4,5)
(1) Interface Design, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany, (2) Division of Solar Cell Technology, Department of Materials Science and Engineering, Uppsala University, Uppsala, Sweden, (3) Energy Materials In-Situ Laboratory Berlin (EMIL), Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany, (4) Helmholtz-Institute Erlangen-Nürnberg for Renewable Energy, Berlin, Germany (5) Department of Chemistry and Pharmacy, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany

**15:00** **Impact of Ag on the electronic transport in low bandgap CuInSe2 solar cells** K 3.4
Maximilian Krause, Simon Moser, Shih-Chi Yang, Shiro Nishiwaki, Ayodhya N. Tiwari, Romain Carron
Laboratory for Thin Films and Photovoltaics, Empa - Swiss Federal Laboratories for Materials Science and Technology, Ueberlandstrasse 129, 8600 Duebendorf, Switzerland

**15:15** **Theoretical and experimental study of stable and metastable phases in sputtered CuInS2 absorbers** **K 3.5**
Kostiantyn V. Sopiha1, Jes K. Larsen1, Clas Persson2,3, Charlotte Platzer-Björkman1, Marika Edoff1
1. Division of Solar Cell Technology, Department of Materials Science and Engineering, Uppsala University, Box 534, SE-75121 Uppsala, Sweden, 2. Centre for Materials Science and Nanotechnology/Department of Physics, University of Oslo, P.O. Box 1048, Blindern, NO-0316 Oslo, Norway, 3. Division of Applied Materials Physics, Department of Materials Science and Engineering, KTH Royal Institute of Technology, SE-10044 Stockholm, Sweden

**15:30** **CuGaSe2 absorber on FTO transparent back contacts** **K 3.6**
A. Thomere(1), M. Placidi(1,2), Maxim Guc(1), Yudania Sánchez(1), Robert Fonoll-Rubio(1), Victor Izquierdo-Roca(1), Z. Jehl Li-Kao(2), A. Perez-Rodriguez(1)
1. Catalonia Institute for Energy Research-IREC, Jardins de les Dones de Negre, 1, 2ª pl., 08930 Sant Adrià de Besòs, Barcelona, Spain 2. Polytechnic University of Catalonia, Electrical Engineering Department, c/Jordi Girona 31, Barcelona 08034, Spain

**15:45** **Discussion**

**16:00**

## Modeling : Mirhosseini - tbd

**16:15** INV **Machine Learning for Accelerated Analyses of Time-resolved Photoluminescence Data via Bayesian Inference** **K 4.1**
Calvin Fai, Prof. Tony Ladd, Prof. Charles J. Hages*
Department of Chemical Engineering, University of Florida, Gainesville, FL, USA 32611 *presenting author, email: c.hages@ufl.edu

**16:45** **First-principles modelling of hydrogen at the absorber-buffer interface in CuInSe2-based solar cells** **K 4.2**
A. G. Marinopoulos
CFisUC, Department of Physics, University of Coimbra, P-3004-516 Coimbra, Portugal

**17:00** **Digital Twins – a simulation model for Cu(In,Ga)Se2 solar cells of high and moderate efficiency** **K 4.3**
Matthias Maiberg1*, Chang-Yun Song1, Marcin Morawski1, Felix Neduck1, Joshua Damm1, Heiko Kempa1, Dimitrios Hariskos2, Wolfram Witte2, Roland Scheer1
1 Institute of Physics, Martin-Luther-University Halle-Wittenberg, von-Danckelmann-Platz 4, 06120 Halle (Saale), Germany 2 Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), Meitnerstraße 1, 70563 Stuttgart, Germany

**17:15** **Advanced feature extraction with machine learning and combinatorial spectroscopic analysis for thin-film chalcogenide photovolta** **K 4.4**
Enric Grau-Luque, Maxim Guc, Fabien Atlan, Andreas Zimmermann, Sergio Giraldo, Ignacio Becerril-Romero, Alejandro Perez-Rodriguez, Victor Izquierdo-Roca
Catalonia Institute for Energy Research (IREC), C/ Jardins de les Dones de Negre 1, 2ª pl., 08930 Sant Adrià de Besòs, Barcelona, Spain, Catalonia Institute for Energy Research (IREC), C/ Jardins de les Dones de Negre 1, 2ª pl., 08930 Sant Adrià de Besòs, Barcelona, Spain, Catalonia Institute for Energy Research (IREC), C/ Jardins de les Dones de Negre 1, 2ª pl., 08930 Sant Adrià de Besòs, Barcelona, Spain, Sunplugged GmbH, Affenhausen 1, 6413 Wildermieming, Austria, Catalonia Institute for Energy Research (IREC), C/ Jardins de les Dones de Negre 1, 2ª pl., 08930 Sant Adrià de Besòs, Barcelona, Spain, Catalonia Institute for Energy Research (IREC), C/ Jardins de les Dones de Negre 1, 2ª pl., 08930 Sant Adrià de Besòs, Barcelona, Spain, Catalonia Institute for Energy Research (IREC), C/ Jardins de les Dones de Negre 1, 2ª pl., 08930 Sant Adrià de Besòs, Barcelona, Spain and Departament d'Enginyeria Electrònica i Biomèdica, IN2UB, Universitat de Barcelona, C/ Martí i Franqués 1, 08028 Barcelona, Spain, Catalonia Institute for Energy Research (IREC), C/ Jardins de les Dones de Negre 1, 2ª pl., 08930 Sant Adrià de Besòs, Barcelona, Spain

**17:30** **Discussion**



**Tuesday may 31**

## Simulations : Pedro Salomé - tbd

**09:00** INV **An accurate and automated approach to generate machine learning interatomic potentials for photovoltaic materials** **K 5.1**
Hossein Mirhosseini
Multiscale Modeling of Energy Materials, Dynamics of Condensed Matter, Chair of Theoretical Chemistry, University of Paderborn, Germany

**09:30** INV **Numerical Simulation of Grain-Boundary in Cu-poor and Cu-rich CIGS thin film solar cells** **K 5.2**
Giovanna Sozzi
Department of Engineering and Architecture - University of Parma

**10:00** **Influence of Interface States on Ultrathin Cu(In,Ga)Se2 Solar Cells with Mo Back Contact: Simulation Perspective** **K 5.3**
Setareh Sedaghat, Jan Lucaßen, Martina Schmid
Faculty of Physics, University of Duisburg-Essen & CENIDE, Forsthausweg 2, 47057, Duisburg, Germany

**10:15** **Thermodynamics and kinetics of phase separation in (Ag,Cu)(In,Ga)Se2** **K 5.4**
Markus Mock, Karsten Albe
TU Darmstadt, TU Darmstadt

**10:30** **Discussion**

**10:45**

## Industrialisation : Philip Schulz - Jan Keller

**11:00** INV **CIGSSe Module Efficiencies on the verge of 20%** **K 6.1**
Thomas Dalibor
AVANCIS GmbH, Otto-Hahn-Ring 6, D-81739 Munich, Germany

**11:30** **Defects in commercial Cu(In,Ga)Se2 modules** **K 6.2**
A. Kingma, J. van den Berg, S. Villa, R. Aninat, M. Theelen
TNO part of Solliance

**11:45** **Towards multi-coloured CIGS solar cells** **K 6.3**
Lena Merges1, Shilpi Shital1, Alice Debot1, Van Ben Chu1, Didier Arl2, Joana Ferreira1, Ricardo G. Poeira1, Omar Ramírez1, Hasan A. Yetkin1, Michele Melchiorre1, Phillip J. Dale1
1 Department of Physics and Materials Science, University of Luxembourg, Belvaux, L-4422, Luxembourg 2 Luxembourg Institute of Science and Technology, Materials Research and Technology Department, 41, rue du Brill, L-4422 Belvaux, Luxembourg

**12:00** **New Technology of Atom Probe Tomography Instrumentation and an Overview of Photovoltaic Applications** **K 6.4**
Larson, D.J.(1), Bunton, J.H.(1), Lenz, D.(1), Prosa, T.J.(1), Reinhard, D.A.(1), Martin, I.(1), Rice, K.P.(1), Clifton, P.H.(1), Chemnitzer, R.(2), and Ulfig, R.M.*(1)
(1)CAMECA Instrument Inc., USA (2)CAMECA SAS, France

**12:15** **Discussion**

**12:30** **Lunch and Plenary**

## : Kesterites & New Materials : -

**15:00** **Study of the Beneficial Effects of Sodium Doping Cu2ZnSnS4 Material** **K 7.1**
M. Marzougui1, H. Hammami1, H. Oueslati1, M. Ben Rabeh*,1 and M. Kanzari1,2
1University of Tunis El Manar, National Engineering School of Tunis, Photovoltaic and Semiconductor Materials Laboratory, 1002, Tunis, Tunisia 2University of Tunis, Preparatory Institute for Engineering Studies of Tunis, Photovoltaic and Semiconductor Materials Laboratory, 1002, Tunis, Tunisia

**15:00** **Synthesis and study of microstructural, optical and electrical properties of Na doped CZTS thin films via thermal evaporation** **K 7.2**
M. Marzougui, M.Ben Rabeh *,1 and M. Kanzari 1,2
1University of Tunis El Manar, National Engineering School of Tunis, Photovoltaic and Semiconductor Materials Laboratory, 1002, Tunis, Tunisia 2University of Tunis, Preparatory Institute for Engineering Studies of Tunis, Photovoltaic and Semiconductor Materials Laboratory, 1002, Tunis, Tunisia

**15:00** **Growth and Characterization of Earth-abundant Quaternary Semiconductor Cu2XSnS4 (M=Zn, Fe, Co and Ni) Thin Films via Thermal Vac** — K 7.3

H. Oueslati1, M. Marzougui1, H. Hammami1, M. Ben Rabeh*,1 and M. Kanzari2
1University of Tunis El Manar, National Engineering School of Tunis, Photovoltaic and Semiconductor Materials Laboratory, 1002, Tunis, Tunisia 2University of Tunis, Preparatory Institute for Engineering Studies of Tunis, Photovoltaic and Semiconductor Materials Laboratory, 1002, Tunis, Tunisia

**15:00** **Structural characterization of the solid solution Cu2Mn(GexSn1-x)S4** — K 7.5

David C. N. Matzdorff [1,2], Dr. Galina Gurieva [1], Dr. Denis Sheptiakov [3], Prof. Dr. Susan Schorr [1,2]
[1] Helmholtz-Zentrum Berlin für Materialien und Energie, Hahn-Meitner-Platz 1, 14109 Berlin, Germany (contact: david.matzdorff@helmholtz-berlin.de) [2] Institut für Geologische Wissenschaften, FU Berlin, Malteserstr. 74-100, 12249 Berlin, Germany [3] Paul Scherrer Institute, Forschungsstrasse 111, 5232 Villigen PSI, Switzerland

**15:00** **Cu2FeSnS4 (CFTS) thin films by sputtering technique for photovoltaic application** — K 7.6

Luigi Frioni, Vanira Trifiletti, Giorgio Tseberlidis, Stefano Marchionna, Simona Binetti
Università degli Studi di Milano Bicocca, Università degli Studi di Milano Bicocca, Università degli Studi di Milano Bicocca, RSE Spa, Università degli Studi di Milano Bicocca

**15:00** **Investigation of the effects of Li-Na co-doping in CZTS solution-processed absorbers on performance and morphology** — K 7.7

Simon Moser, Ayodhya N. Tiwari, Romain Carron
Laboratory for Thin Films and Photovoltaics, Empa - Swiss Federal Laboratories for Materials Science and Technology, Überlandstrasse 129, 8600 Dübendorf, Switzerland

**15:00** **Growth and properties of Cu2NiSnS4 (CNTS) films using spray pyrolysis** — K 7.9

Outman El Khouja *(1, 2), Khalid Nouneh (2), Mohamed Ebn Touhami (2), Abdelali Talbi (2), Yassine Khaaissa (2), Elena Matei (1), Monica Enculescu (1), Viorica Stancu (1), Aurelian Catalin Galca (1)
(1) National Institute of Materials Physics, Atomistilor 405A, 077125 Magurele, Romania, (2) Faculty of Science, Ibn Tofail University, Campus Universitaire, 14000 Kenitra, Morocco

**15:00** **Sequential magnetron sputtering approach for the synthesis of Cu2ZnSnS4 films** — K 7.10

Mohamed Yassine Zaki *(1), Florin Sava (1), Iosif Daniel Simandan (1), Angel Theodor Buruiana (1,2), Claudia Mihai (1), Alin Velea, Aurelian Catalin Galca (1)
(1) National Institute of Materials Physics, Magurele, Romania, (2) Faculty of Physics, University of Bucharest, Magurele, Romania * lead presenter

**16:00** **Optical Constants of Cu2CoSnS4 Thin Films Grown via Thermal Evaporation** — K 7.11

H. Hammami1, M. Ben Rabeh*,1 and M. Kanzari1,2
1University of Tunis El Manar, National Engineering School of Tunis, Photovoltaic and Semiconductor Materials Laboratory, 1002, Tunis, Tunisia 2University of Tunis, Preparatory Institute for Engineering Studies of Tunis, Photovoltaic and Semiconductor Materials Laboratory, 1002, Tunis, Tunisia

**16:00** **Electron selective contacts based on transition metal oxides and amino acid dipoles for CZTSe solar cells.** — K 7.12

Rosa Estefanía Almache, Benjamin Pusay, Eloi Ros, Kunal Tiwari, Alex Jimenez, Alejandro Pérez, Gerard Mastmitja, Cristóbal Voz, Edgardo Saucedo, Joaquin Puigdollers, Pablo Ortega
Universitat Politecnica de Catalunya (UPC), Departament d'Enginyeria Electronica, Universitat Politecnica de Catalunya (UPC), Departament d'Enginyeria Electronica, Universitat Politecnica de Catalunya (UPC), Departament d'Enginyeria Electronica, Catalonia Institute for Energy Research (IREC), Catalonia Institute for Energy Research (IREC), Catalonia Institute for Energy Research (IREC), Universitat Politecnica de Catalunya (UPC), Departament d'Enginyeria Electronica, Universitat Politecnica de Catalunya (UPC), Departament d'Enginyeria Electronica, Universitat Politecnica de Catalunya (UPC), Departament d'Enginyeria Electronica, Universitat Politecnica de Catalunya (UPC), Departament d'Enginyeria Electronica, Universitat Politecnica de Catalunya (UPC), Departament d'Enginyeria Electronica,

**16:00** **High-Quality Large-Area Growth of MoS2 Monolayers using Combinational Phase Precursors based Chemical Vapor Deposition** — K 7.13

Ary Anggara Wibowo (1)*, Mike Tebyetekerwa (2), Anh D. Bui (1), Sandra Saji (3), Zongyou Yin (3), Yuerui Lu (1), Daniel Macdonald (1)*, and Hieu T. Nguyen (1)*
(1) School of Engineering, The Australian National University, Canberra, ACT 2601, Australia (2) School of Chemical Engineering, The University of Queensland, St Lucia, Brisbane 4072, Australia (3) Research School of Chemistry, The Australian National University, Canberra, ACT 2601, Australia



**16:00** **Different Morphological Growth of Molybdenum Disulfide via Aerosol-Assisted Chemical Vapour Deposition** — K 7.16

Lewis Adams, Nilanthy Balakrishnan, Peter D. Matthews
School of Chemical and Physical Sciences, Keele University, Keele, ST5 5BG, UK

**16:00** **Efficient ultrathin AgBiS2 nanocrystal solar cells via cation disorder engineering (Fundamentals & Theory)** — K 7.17

Seán R. Kavanagh, Yongjie Wang, Ignasi Burgués-Ceballos, Gerasimos Konstantatos, Aron Walsh, David O. Scanlon
Thomas Young Centre and Department of Chemistry, University College London, London WC1H 0AJ, U.K, Thomas Young Centre and Department of Materials, Imperial College London, London SW7 2AZ, U.K, ICFO-Insitut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology, Casteldefels, 08860 Barcelona, Spain, Department of Materials Science and Engineering, Yonsei University, Seoul 03722, Republic of Korea, ICREA-Institució Catalana de Recerca i Estudia Avançats, Lluis Companys 23, 08010 Barcelona, Spain

**16:00** **Sb2(S,Se)3-x thin films by sulfur replacement in Sb2S3 using pulsed laser irradiated Se nanocolloids** — K 7.19

Aiswarya Nadukkandy, Diana María Borunda Corral, Bindu Krishnan,Sadasivan Shaji, David Avellaneda Avellaneda, Josue Amilcar Aguilar-Martínez
Facultad de Ingeniería Mecánica y Eléctrica, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, Nuevo León, 66455, México,Centro de Innovación, Investigación y Desarrollo en Ingeniería y Tecnología (CIIDIT)- Universidad Autónoma de Nuevo León, Parque de Investigación e Innovación Tecnológica (PIIT), Apodaca, Nuevo León, 66600, México.

**16:00** **Structural, morphological and Stability enhancement of CZTS thin film by appropriate PH adjustment for thin film application.** — K 7.20

Shafi Ullah1, Muhammad Aamir Shafi 2, Hanif Ullah3 and Bernabé Mari1.
1 Instituto de diseño y Fabricación (IDF)-Universitat Politécnica de València (UPV) Camino de Vera, s/n 46022 Valencia, Spain. 2 COMSATS University Islamabad, Abbottabad Campus (CUI), Pakistan. 3 Department of Electrical Engineering, Federal Urdu University of Arts, Science and Technology, Islamabad, Pakistan.

**17:00** **Influence of vapour transport deposition conditions on properties of Sb2Se3 thin film absorber and solar cells** — K 7.21

Sajeesh Vadakkedath Gopi, Nicolae Spalatu, Atanas Katerski, Malle Krunks and Ilona Oja Acik.
Department of Materials and Environmental Technology, Tallinn University of Technology, Ehitajate tee 5, 19086 Tallinn, Estonia

**17:00** **Development of Bismuth-based thin film semiconductor alloys for photovoltaic applications** — K 7.22

Mykhailo Koltsov, Nicolae Spalatu, Jaan Hiie, Malle Krunks, Ilona Oja Acik.
Department of Materials and Environmental Technology, Tallinn University of Technology, Ehitajate tee 5, 19086 Tallinn, Estonia

**17:00** **Development of antimony sulfide thin-film solar cells for semi-transparent applications** — K 7.23

*Robert Beglaryan, Atanas Katerski, Ilona Oja Acik, Malle Krunks
Laboratory of Thin Film Chemical Technologies, Department of Materials and Environmental Technology, Tallinn University of Technology, Estonia

**17:00** **Copper-related defects in ZnTe thin films grown by close space sublimation method** — K 7.24

1Ion Lungu, 2Lidia Ghimpu, 1Dumitru Untila and 1Tamara Potlog
1Physics Department and Engineering, Moldova State University, MD-2009, Chisinau, Moldova 2 Institute of Electronic Engineering and Nanotechnologies, Academy of Sciences of Moldova, MD-2028, Chisinau, Moldova

**17:00** **Gallium Sulphide layers by Close-Spaced Sublimation for UV Detector applications** — K 7.25

Spoială, D.(1), Vatavu, E.(2), Ghiletchii, Gh.(1), Dmitroglo, L.(1,2), Shapoval, O.(1), Belenchuk, A.(1), Rotaru, C.(1), Palamarciuc, O.(1), Narolschi, Ig.(1), Vatavu, S.*(1,3)
(1) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (2) Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (3) CaRISMA Research Center, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova

**17:00** **Transition metal dichalcogenides for light harvesting applications** — K 7.26

Ganesh Ghimire1, Denys I. Miakota1, Rajesh Ulaganatan1, and Stela Canulescu1
Department of Photonics Engineering, Technical University of Denmark, DK-4000 Roskilde, Denmark

**Wednesday june 1**

## Kesterites : Phillip Dale - tbd

**09:00** INV **Band gap increase in kesterites through Ge alloying** K 8.1
C. Platzer Björkman, N. Saini, J. K. Larsen
Div. Solar Cell Technology, Dep Materials Science and Engineering Uppsala University

**09:30** **Surface Electronic Characterisation of Cu2ZnSn(S,Se)4 Films from Sn(II) and Sn(IV) precursors** K 8.2
Alice Sheppard, Neil A. Fox, David J. Fermin
School of Chemistry, University of Bristol, Cantock's Close, Bristol (UK) and H.H. Wills Physics Laboratory, University of Bristol, Tyndall Av., Bristol (UK), School of Chemistry, University of Bristol, Cantock's Close, Bristol (UK) and H.H. Wills Physics Laboratory, University of Bristol, Tyndall Av., Bristol (UK), School of Chemistry, University of Bristol, Cantock's Close, Bristol (UK)

**09:45** **Crystallographic structure and point defects vs. efficiency and stability in Cu2ZnSn(S,Se)4 monograin solar cells** K 8.3
G. Gurieva1*, K. Ernits2, N. Siminel3, A. Manjon Sanz4, D. Sheptyakov 5, M. Kirkham4, D. Meissner2,6, S. Schorr1,7
1 Helmholtz-Zentrum Berlin für Materialien und Energie, 14109 Berlin, Germany 2 crystalsol OÜ, 12618 Tallin, Estonia 3 Institute of Applied Physics, Academy of Sciences of Moldova, MD-2028 Chisinau, Moldova 4Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA 5 Paul Scherrer Institute, 5232 Villigen PSI, Switzerland 6 Tallinn University of Technology, Tallin, Estonia 7 Freie Universität Berlin, Institute of Geological Sciences, 12249 Berlin, Germany

**10:00** **Characterization of photogenerated carrier transport of Na passivated flexible Cu2ZnSn(S,Se)4 thin film solar cells under mechan** K 8.4
Ha Kyung Park 1, Yunae Cho 1,2, Juran Kim 1, Sammi Kim 3, Kee-Jeong Yang 3, Dae-Hwan Kim 3, Jin-Kyu Kang 3, William Jo 1,2
1 Department of Physics, Ewha Womans University, Republic of Korea, 2 New and Renewable Energy Research Center, Ewha Womans University, Republic of Korea, 3 Division of Energy Technology, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Republic of Korea

**10:15** **Semi-transparent Cu2ZnGe(S,Se)4 thin-film solar cells** K 8.5
J.A. Segura (1), A. Ruiz-Perona (1), D. Palma (1), Y. Sánchez (2), R. Serna (3), M. Placidi (2,4), A. Thomere (2), T. Bertram (5), J.M. Merino (1), R. Caballero*(1)
(1) Universidad Autónoma de Madrid, Departamento de Física Aplicada, Spain (2) IREC, Catalonia Institute for Energy Research, Spain (3) Instituto de Óptica Daza de Valdés, CSIC, Spain (4) Universidad Politécnica de Cataluña, Spain (5) PVcomB-Helmholtz Zentrum Berlin für Materialien und Energie, Germany *raquel.caballero@uam.es

**10:30** **Discussion**

**10:45**

## : CIGSe & contact materials : -

**11:00** **Radio-frequency magnetron sputtering deposition process for In2O3:H transparent back contact for Cu(In,Ga)Se2-based solar cells** K 9.1
Marina Alves*(1, 2), Joaquim Carneiro (2), Vasco Teixeira (2), & Sascha Sadewasser (1)
(1) International Iberian Nanotechnology Laboratory, Av. Mestre José Veiga s/n, Braga, Portugal (2) Centre of Physics of Minho and Porto Universities (CF-UM-UP), Azurém Campus, 4800-058 Guimarães, Portugal

**11:00** **Electrical properties of CIGSSe Solar Cells with different Ag/(Ag Cu) ratio** K 9.2
Shih-Kai Lin, Jien-Han Siew, Tzu-Ying Lin
Shih-Kai Lin, Advanced Thin Film Energy Materials Laboratory, Department of Materials Science and Engineering National Tsing Hua University, Hsinchu, Taiwan, Jien-Han Siew, Advanced Thin Film Energy Materials Laboratory, Department of Materials Science and Engineering National Tsing Hua University, Hsinchu, Taiwan, Tzu-Ying Lin, Advanced Thin Film Energy Materials Laboratory, Department of Materials Science and Engineering National Tsing Hua University, Hsinchu, Taiwan.

**11:00** **Impact of heat soaking on Cu(In,Ga)(S,Se)2 solar cells** K 9.3
Jien Han Siew, Shih-Kai Lin, Tzu-Ying Lin*
Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan



**11:00** **Buffer Chemistry of Chemical Bath Deposition-CdS thin film on CIGS solar cells** K 9.4
Yung-Hsuan Chen, Chi-Feng Hsieh, Jien-Han Siew, Tzu-Ying Lin
Department of Materials Science and Engineering, National Tsing Hua University, 101, Sec. 2, Kuang-Fu Road, Hsinchu 30013, Taiwan R. O. C.

**11:00** **Investigation and mitigation of sputter damage in CIGSe during deposition of window layers for photovoltaic devices** K 9.5
Ramis Hertwig, Shiro Nishiwaki, Ayodhya N. Tiwari, Romain Carron
Laboratory for Thin Films and Photovoltaics, Empa – Swiss Federal Laboratories for Materials Science and Technology, Überlandstrasse 129, 8600 Dübendorf, Switzerland

**11:00** **Impact of Al, Mg and Sn doping on structural, optical, and electrical properties of n type ZnO films for optoelectronic devices** K 9.6
G. El Hallani1, M. Khuili1, S. Nasih2, N. Fazouan1,2,*, A. Liba1, L. Laanab 3, O. Mounkachi 4, A. Mzerd 5, E. H. Atmani 2 .
1 -Physical Materials Laboratory. Faculty of Sciences and Technologies, Beni Mellal, Morocco, 2- Physics of Condensed Matters and Renewables Energies Laboratory. Faculty of Sciences and Technologies, Mohammedia, Morocco, 3 -Conception Systems Laboratory, Faculty of Sciences, Rabat, Morocco, 4 -Condensed Matter and Interdisciplinary Sciences Laboratory, Faculty of Sciences, Rabat, Morocco, 5 -Physical Materials Laboratory. Faculty of Sciences, Rabat, Morocco.

**11:00** **Fabrication of semi-transparent Cu(In, Ga)Se2 solar cells aided by Bromine etching** K 9.7
Pedro Santos (1),*, Pedro Anacleto (1), Shilpi Shital (2), Alice Debot (2), Phillip J.Dale (2), Sascha Sadewasser (1)
(1) International Iberian Nanotechnology Laboratory, Avenida Mestre José Veiga s/n, 4715-330 Braga, Portugal (2) Department of Physics and Materials Sciences, 41, rue du Brill L-4422 Belvaux, Luxembourg.

**11:00** **Effect of Cu-In-Ga target composition on hybrid-sputtered Cu(In,Ga)Se2 solar cells** K 9.8
P. Santos (1), D. Brito (1), P. Anacleto (1), J. Fonseca (1), D. Brito Sousa (2), C.J. Tavares (2), J. Virtuoso (1,3), M. Alves (1,2), A. Pérez-Rodríguez (1), S. Sadewasser (1)
(1) INL – International Iberian Nanotechnology Laboratory, Av. Mestre José Veiga s/n, 4715-330 Braga, Portugal, (2) Centre of Physics of the Minho and Porto Universities, Campus Azurém, 4804-533 Guimarães, Portugal, (3) Universidad Politécnica de Madrid, 28040 Madrid, Spain

**12:00** **Lunch and Plenary**

## CdTe & alloys : Zakutayev Andriy - Reese Matthew

**15:00** INV **Te Alloys and Te Oxides to Enhance the Back-Contact of CdTe Cells** K 10.1
James Sites
Colorado State University

**15:30** **Impact of metastable defect structures on carrier recombination in solar cells** K 10.2
Seán R. Kavanagh,1,2 Aron Walsh,2 David O. Scanlon1 and Christoph Freysoldt3
1. Thomas Young Centre and Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, U.K. 2. Thomas Young Centre and Department of Materials, Imperial College London, Exhibition Road, London SW7 2AZ, U.K. 3. Max-Planck-Institut für Eisenforschung GmbH, Max-Planck-Str. 1, 40237 Düsseldorf, Germany

**15:45** **Raman study of Cd1-xZnxTe mixed crystal** K 10.3
T. Alhaddad,1 M. B. Shoker,1 O. Pagès,1 A.V. Postnikov,1 A. Polian,2 S. Diliberto,3 A. En Naciri,1 L. Broch,1 P. Franchetti,1 A. Marasek,4 and K. Strzałkowski4
1 Université de Lorraine, LCP-A2MC, ER 4632, F-57000 Metz, France 2 IMPMC, Sorbonne Université — UMR CNRS 7590, F-75005 Paris, France 3 IJL, UMR CNRS 7198, Université de Lorraine, F-54011 Nancy, France 4 Institute of Physics, N. Copernicus University, 87-100 Toruń, Poland

**16:00** **Electronic properties of CdTe based detector structures by Kelvin Probe and Photoelectron Yield Spectroscopy** K 10.4
Vatavu, S.*(1,2), Rotaru, C.(1,2), Narolschi, Ig.(1), Ghiletchii, Gh.(1), Bercu, E.(1), Nicorici, V.(1), Unold, T.(3), Rusu, M.(1,3)
(1) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (2) CaRISMA Research Center, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (3) Struktur und Dynamik von Energiematerialien, Helmholtz-Zentrum Berlin für Materialien und Energie, Lise-Meitner Campus, Hahn-Meitner-Platz 1, 14109 Berlin, Germany

**16:15** **Study of Cadmium Telluride-Embedded Copper Nanowire Interfaces for Photovoltaic Applications** **K 10.5**

Ana-Maria PANAITESCU (1), Iulia ANTOHE (2), Claudiu LOCOVEI (1,3), Sorina IFTIMIE (1), Stefan ANTOHE (1,4), Luc PIRAUX (5), and Vlad-Andrei ANTOHE (1,5,*)
(1) University of Bucharest, Faculty of Physics, R&D Center for Materials and Electronic & Optoelectronic Devices (MDEO), Atomistilor Street 405, 077125 Magurele, Ilfov, Romania, (2) National Institute for Lasers, Plasma and Radiation Physics (INFLPR), Atomistilor Street 409, 077125 Magurele, Ilfov, Romania, (3) National Institute of Materials Physics (NIMP), Atomistilor Street 405A, 077125 Magurele, Ilfov, Romania, (4) Academy of Romanian Scientists (AOSR), Splaiul Independentei 54, 050094 Bucharest, Romania, (5) Université catholique de Louvain (UCLouvain), Institute of Condensed Matter and Nanosciences (IMCN), Place Croix du Sud 1, B-1348 Louvain-la-Neuve, Belgium, *Corresponding and contact author: vlad.antohe@fizica.unibuc.ro (V. A. ANTOHE).

**16:30** **Discussion**

**16:45**

**17:00** **Investigating the origin of the N1 signature in admittance spectroscopy of CIGS solar cells by a variation of cell layers** **K 11.2**

Stephan J. Heise, Hippolyte Hirwa, Jörg Ohland
Ultrafast Nanoscale Dynamics, Institute of Physics, University of Oldenburg, D-26111 Oldenburg, Germany

**17:00** **Raman study of the prospective Cd1-xBexTe (x≤0.07) semiconductor mixed crystal** **K 11.4**

A. Elmahjoubi(1), M.B. Shoker(1), O. Pagès(1), A. V. Postnikov(1), A. Polian(2), S. Diliberto(3), C. Gardiennet(4), G. Kervern(4), L. Broch(1), A. En Naciri(1), P. Franchetti(1), K. Strzałkowski(5), A. Marasek(5)
1 LCP-A2MC, Université de Lorraine, 57078 Metz, France. 2 IMPMC, Sorbonne Université — UMR CNRS 7590, F-75005 Paris, France 3 Institut Jean Lamour, Campus ARTEM, Université de Lorraine, 54011 Nancy, France. 4 Laboratory of Crystallography, Magnetic Resonance and Modelling, Université de Lorraine, 54506 Vandoeuvre-lès-Nancy, France. 5 Institute of Physics, N. Copernicus University, 87-100 Toruń, Poland.

**17:00** **Updated SCAPS baseline models reveal main differences between ultrathin, bifacial, and standard CIGS solar cells** **K 11.5**

André F. Violas (a,b,c,d), António J. N. Oliveira (a,b,c), Jennifer P. Teixeira (a), Tomás S. Lopes (a,e,f,g), João R. S. Barbosa (a), Marco A. Curado (a,h), António Vilanova (a), Margarida Monteiro (a), Diana Mesquita (a,i), Jenny A. M. Eriksson (j), Marika Edoff (d), Tobias Törndahl (d), Paulo A. Fernandes (a,b,k), Pedro M. P. Salomé (a,c)
(a) INL – International Iberian Nanotechnology Laboratory, Avenida Mestre José Veiga, 4715-330 Braga, Portugal, (b) i3N, Departamento de Física, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal, (c) Departamento de Física da Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal, (d) Ångström Laboratory, Solid State Electronics, Ångström Solar Center, Uppsala University, Uppsala SE-751 21, Sweden, (e) Imec division IMOMEC (partner in Solliance), Wetenschapspark 1, 3590 Diepenbeek, Belgium, (f) Institute for Material Research (IMO), Hasselt University (partner in Solliance), Agaangebouw H, Diepenbeek, 3590, Belgium, (g) EnergyVille 2, Thor Park 8320, 3600 Genk, Belgium, (h) Department of Physics, University of Coimbra, CFisUC, P-3004-516 Coimbra, Portugal, (i) Departamento de Engenharia, Universidade do Minho, Campus de Azurém, 4800–058 Guimarães, Portugal, (j) Biology Education Centre, Uppsala University, Norbyvägen 14, 752 36 Uppsala, Sweden, (k) CIETI, Departamento de Física, Instituto Superior de Engenharia do Porto, Instituto Politécnico do Porto, Porto 4200-072, Portugal,

**17:00** **Sputtered CdO nanolayer as an interface engineering approach to CdTe solar cells** **K 11.6**

1Amjad Al-Qassem, 2N. Spalatu, 3 V. Fedorov, 4R. Josepson, 1L. Gagara and 1T. Potlog
1Physics Department and Engineering Moldova State University Chisinau, MD 2009, Republic of Moldova 2 Department of Materials and Environmental Technology, Tallinn University of Technology, Ehitajate tee 5, 19086, Tallinn, Estonia 3Institute of Electronic Engineering and Nanotechnologies, Chisinau, MD-2028, Republic of Moldova 4 Division of Physics, Tallinn University of Technology, Ehitajate tee 5, 19086, Tallinn, Estonia



**17:00** **On the photovoltaic performances of CdTe/CdS heterojunction based devices – the effect of the transparent electrode** **K 11.7**

S. Iftimie1, A.M. Raduta1, A.M. Panaitescu1, I. Radulian1, C. Locovei1,2, V.A. Antohe1,3, A. Radu1, L. Ion1, and S. Antohe1,4
1University of Bucharest, Faculty of Physics, Bucharest-Magurele, Romania, 2National Institute of Materials Physics, Bucharest-Magurele, Romania, 3Catholic University of Louvain, Institute of Condensed Matter and Nanoscience, Louvain-la-Neuve, Belgium, 4Academy of Romanian Scientists, Bucharest, Romania

**17:00** **QUASIPARTICLE BOUND STATES IN THE SOLID STATE PHYSICS: a CdTe CASE STUDY** **K 11.8**

Klyukanov, A.A.(1), Varzari, A.(1), Vatavu, S.(1)
(1) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova

**18:00** **E-MRS EU-40 Materials Prize & MRS Mid-Career Researcher Award Presentations**

**Thursday june 2**

## Characterization : Abou-Ras Daniel - Oana Cojocaru-Miredin

**09:00** INV **Nanoscale electronic properties of alkali-treated CIGSe thin-film solar cells investigated by advanced scanning probe microscopy** — K 12.1
N. Nicoara(1)*, D. Sharma(1), R. Manaligod(1), P. Jackson(2), D. Hariskos(2), W. Witte(2), G. Sozzi(3), R. Menozzi(3), Sascha Sadewasser(1)
(1)International Iberian Nanotechnology Laboratory, 4715-330 Braga, Portugal (2) Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg, 70565 Stuttgart, Germany (3)University of Parma, 43124 Parma, Italy

**09:30** **Peculiar bond length dependence in (Ag,Cu)GaSe2 thin film alloys revealed by X-ray absorption spectroscopy** — K 12.2
Falk, H.H.*(1), Eckner, S.(1), Ritter, K.(1), Levcenco, S.(1), Pfeiffelmann, T.(1), Welter, E.(2), Shafarman, W.N.(3) , Schnohr, C.S.(1).
(1) Felix-Bloch-Institut für Festkörperphysik, Universität Leipzig, Germany, (2) Deutsches Elektronen-Synchrotron DESY - A Research Centre of the Helmholtz Association, Hamburg, Germany, (3) Department of Materials Science and Engineering, University of Delaware, Newark, USA

**09:45** **Low temperature bias and frequency dependent admittance loss maps** — K 12.4
G. Brammertz, R. Scaffidi, S. Hamtaei, Y. Wang, J. de Wild, M. Meuris, J. Poortmans, B. Vermang
all authors are with: 1. imec division IMOMEC - partner in Solliance, Wetenschapspark 1, 3590 Diepenbeek, Belgium 2. Institute for Material Research (IMO) Hasselt University – partner in Solliance, Wetenschapspark 1, 3590 Diepenbeek, Belgium 3. EnergyVille, Thorpark 8310 & 8320, 3600 Genk, Belgium. J. Poortmans is also with: 4. Department of Electrical Engineering, KU Leuven, Kasteelpark Arenberg 10, 3001 Heverlee, Belgium.

**10:00** **Chemical and Electronic Properties of Co-Evaporated In2Se3 and RbInSe2 Thin Films from Photoemission Spectroscopies and Kelvin P** — K 12.5
M. Rusu1, N. Maticiuc2, T. Kodalle2, T. Bertram2, I. Simsek1, I. Lauermann2, C. A. Kaufmann2, R. Schlatmann2, S. Schorr1,3, and T. Unold1
1Department Structure and Dynamics of Energy Materials, Helmholtz-Zentrum Berlin für Materialien und Energie, Lise-Meitner Campus, Hahn-Meitner-Platz 1, 14109 Berlin, Germany 2Competence Centre Photovoltaics Berlin (PVcomB), Helmholtz-Zentrum Berlin für Materialien und Energie, Schwarzschildstr. 3, 12489 Berlin, Germany 3Institute of Geological Sciences, Freie Universitaet Berlin, Maltese St. 74-100, 12249 Berlin, Germany

**10:15** **Discussion**

**10:30**

## New materials : Byungha Shin - tbd

**11:00** INV **Emerging Chalcogenide Thin Films for Next Generation Photovoltaic Devices** — K 13.1
Lydia Helena WONG 1,2
1 School of Materials Science and Engineering, Nanyang Technological University, Singapore, 2 Campus of Research Excellence and Technological Enterprise (CREATE), Singapore

**11:30** **Efficient AgBiS2 Nanocrystal Solar Cells via Cation Disorder Engineering** — K 13.2
Yongjie Wang* (1), Seán R. Kavanagh (2, 3), Ignasi Burgués-Ceballos (1), Aron Walsh (3, 4), David Scanlon (2), Gerasimos Konstantatos (1, 5)
(1) ICFO-Institut de Ciencies Fotoniques, The Barcelona Institute of Science and Technology, Spain, (2) Thomas Young Centre and Department of Chemistry, University College London, U.K, (3) Thomas Young Centre and Department of Materials, Imperial College London, U.K., (4) Department of Materials Science and Engineering, Yonsei University, Republic of Korea, (5) ICREA-Institució Catalana de Recerca i Estudia Avançats, Spain. * Lead presenter

**11:45** **Elucidating the local structure of V substitutes in In2S3 for intermediate band solar cells** — K 13.3
Ghorbani, E.(1), Schiller, M.(2,3), Falk, H.H.(2), Wägele, L.(3), Eckner, S.(2), Kempa, H.(3), d'Acapito, F.(4), Scheer, R.(3), Albe, K.(1) & Schnohr, C.S.*(2).
(1)Institut für Materialwissenschaft, Technische Universität Darmstadt, Germany, (2)Felix-Bloch-Institut für Festkörperphysik, Universität Leipzig, Germany, (3) Martin-Luther-Universität Halle-Wittenberg, Institut für Physik, Halle, Germany, (4) CNR-IOM-OGG c/o ESRF LISA CRG, Grenoble, France



**12:00** **Atomic Layer Deposition of Cu2SnS3 Thin Films: Effects of Composition and Heat Treatment on Phase Transformation** — K 13.4
Raphael Edem Agbenyeke, David J. Fermin*
School of Chemistry, University of Bristol, Cantock's Close, Bristol BS8 1TS, United Kingdom

**12:15** **Close to energy gap band bending at SnS interface** — K 13.5
Issei Suzuki, Binxiang Huang, Sakiko Kawanishi, Takahisa Omata, Andreas Klein
Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai 980-8577, Japan, Department of Materials and Earth Science, Electronic Structure of Materials, Technical University of Darmstadt, Otto-Berndt-Str. 3, 64287 Darmstadt, Germany

**12:30** **Discussion**

**12:45** **Lunch and Plenary**

## Contact materials : Charlotte Platzer Björkman - tbd

**15:15** INV **Co-optimization of alloy compositions of CdSeyTe1-y absorbers and MgxZn1-xO contacts in chalcogenide thin film solar cells** — K 14.1
Andriy Zakutayev
National Renewable Energy Laboratory, Golden, CO, USA

**15:45** **Mechanistic aspects of the solution deposition of Zn(O,S) as buffer for CIGS-based solar cells introducing oxidative and reducti** — K 14.2
Mariana Montoya-Gómez, Stefan Paetel, Wolfram Hempel, Ana Kanevce, Theresa Magorian-Friedlmeier, and Dimitrios Hariskos
Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), Meitnerstr. 1, 70563 Stuttgart, Germany

**16:00** **Wide bandgap Cu(In)GaSe2 solar cells with alternative front contacts** — K 14.4
Jackson Lontchi* (1), Alexandre Crossay (2), Amelle Rebai (2), Nathanaelle Schneider (2), Damien Coutancier (2), Baptiste Berenguier (2), Polyxeni Tsoulka (3), Jean-Francois Guillemoles (2), Negar Naghavi (2), Nicolas Barreau (3), Daniel Lincot (2).
(1) Institut Photovoltaïque d'Ile-de-France (IPVF), 91120 Palaiseau, France. (2) Centre National de la Recherche Scientifique (CNRS) UMR9006 IPVF, 91120 Palaiseau, France. (3) Institut des Matériaux Jean Rouxel (IMN) UMR6502, Université de Nantes, CNRS, 44322, Nantes Cedex 3, France.

**16:15** **Investigation of CuSbSe2 /Zn1-xMgxO Interface for Photovoltaic Applications** — K 14.5
Ozge Surucu, Ayşenur Gencer, Gokhan Surucu
Atilim University, Department of Electrical and Electronics Engineering, Ankara, Turkey, Karamanoglu Mehmetbey University, Department of Physics, Karaman, Turkey, Middle East Technical University, Department of Physics, Ankara, Turkey and Ahi Evran University, Department of Electric and Energy, Kirsehir, Turkey

**16:30** **Discussion and Closing**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM L

## Chromogenic materials and devices

*Symposium Organizers :*

Aline ROUGIER, ICMCB, UMR-CNRS 5026

Bernard DAM, Delft University of Technology, Chemical Engineering

Fabien CAPON, Institut Jean Lamour

Smagul KARAZHANOV, Institute for Energy Technology

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium - B. Dam, F. Capon, S. Karazhanov, A. Rougier**

### I : Fabien Capon &#8211

**09:00** **Temperature-Responsive Reflective Coatings for Smart Windows** **L I.1**
Albert Schenning
Eindhoven University of Technology

**09:30** **Thermochromic properties of NiTiO3** **L I.2**
Acher, L. (1), Ji, H*(1)., Garino, N. (1), Massuyeau, F.(2), Jobic, S.(2), Pontille, L. (1), Cauwet, F. (1), Ferro, G. (1), & Carole, D. (1).
(1) Laboratoire des Multimatériaux et Interfaces, UMR CNRS 5615, Université Claude Bernard Lyon 1, F-69622 Villeurbanne, France (2) Institut des Matériaux Jean Rouxel, IMN, Université de Nantes, CNRS, F-44000 Nantes, France * lead presenter

**09:45** **Thermochromic Coatings and Laminates for Smart Windows Comprising W-Doped VO2 Nanopigments** **L I.3**
Hupperetz, J.F.B.(1)(2), Yeung, C.P.K.(1)(2), Habets, R.(1)(2), Leufkens, L.(1)(2), van Zandvoort, R.(1)(2), Wolters, D.(1)(2), Meulendijks, N.(1)(2), Mann, D.(1)(2), Buskens, P(1)(2)(3).
(1) The Netherlands Organisation for Applied Scientific Research (TNO), High Tech Campus 25, 5656AE Eindhoven, The Netherlands. (2) Brightlands Materials Center, Urmonderbaan 22, 6167RD Geleen, The Netherlands. (3) Hasselt University (UHasselt), Institute for Materials Research (IMO), DESINe group, Martelarenlaan 42, 3500 Hasselt, Belgium.

**10:00** **Oxidation of a novel V2N precursor as an efficient method to form thermochromic VO2 thin films** **L I.4**
A.C. García-Wong, D. Pilloud, S. Bruyère, F. Capon, J.F. Pierson
Institut Jean Lamour, UMR 7198, CNRS-Université de Lorraine, Campus Artem, 2 allée André Guinier, 54011 Nancy, France.

**10:15** **Atomic Layer Deposition (ALD) of thermochromic VO2 thin film** **L I.5**
A. Jolivet a, J. Cardin a, C. Frilay a, O. Debieu b, P. Marie a, S. Duprey a, F. Lemarié a, X. Portier a, B. Horcholles a, P. Bazin c, J. More-Chevalier d, P. Fitl d, S. Cicho? d. J. Lan?ok d, Wojciech Jadwisienczak e, David Ingram f, C. Labbé a
a: CIMAP Normandie Université, ENSICAEN, UNICAEN, CEA, CNRS, 6 Bd Maréchal Juin, 14050 Caen Cedex 4, France, b: CIRIMAT, 4 allée Emile Monso, BP-44362, 31030 Toulouse Cedex 4, France, c: LCS Normandie Université, ENSICAEN, 6 Bd Maréchal Juin, 14050 Caen, France, d: Institute of Physics, Czech Academy of Sciences, Na Slovance 2, 18221 Praha 8, Czech Republic, e: School of Electrical Engineering and Computer Science, Ohio University, Athens, Ohio 45701, USA, f: Department of Physics and Astronomy, Ohio University, Athens, Ohio 45701, USA

**10:30** **Discussion**

### II : Aline Rougier - Anthony Maho

**10:45** INV **Fabry-Perot-type multi-color electrochromic materials and devices** **L II.1**
Zhigang Zhao
Key Lab of Nanodevices and Applications, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, Suzhou 215123, China

**11:15** **Development of Variable Emissivity Polymer Coating for Thermal Radiator** **L II.2**
Gwendoline Petroffe,(a) Vincent Roumegoux,(a) Jean-Paul Dudon,(b) Sophie Cantin,(a) Frédéric Vidal,(a) Pierre-Henri Aubert,(a)
(a) LPPI, CY Université, 5 mail Gay-Lussac, 95031 Cergy-Pontoise Cedex, France.
(b) Thales Alenia Space (TAS), 100 Boulevard du Midi, 06150 Cannes, France

**11:30** **Printable Fast-Curing Poly(ionic liquids) for Electrochromic Coordination Polymer** **L II.3**
Wei Church Poh, Xuefei Gong, Alice Lee-Sie Eh, Pooi See Lee
School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798



**11:45** **Luminescent mechanochromic materials based on copper iodide compounds** **L II.4**
Raquel Utrera-Melero, Florian Massuyeau, Jean-Yves Mevellec, Camille Latouche, and S. Perruchas
Université de Nantes, CNRS, Institut des Matériaux de Nantes Jean Rouxel, IMN, F-44000 Nantes, France.

**12:00** **Study of localized surface plasmon resonance(LSPR) induced electrolyte chemistry to achieve quadruple mode electrochromic device** **L II.6**
Jiseon Kim*(1), Dongwon Shin(1), Sungjun Choi(1) and Caroline Sunyong Lee(1)
(1) Department of materials science and chemical engineering, Hanyang University, South Korea

**12:15** **Discussion**

**12:30** **Lunch**

### III : Bernard Dam &#8211

**13:45** INV **Photochromism in oxygen-containing rare-earth hydrides ? what have we learned?** **L III.1**
D. Primetzhofer
Department of Physics and Astronomy, Uppsala University, Box 516, SE-751 20 Uppsala, Sweden

**14:15** **Photochromism in Rare-Earth Oxyhydride thin films** **L III.2**
Bernard Dam1, Giorgio Colombi1, Diana Chaykina1, Zying Wu1, Gilles A. De Wijs2, Shrestha Banerjee2, Arno P. M. Kentgens2, Stephan W. H. Eijt1
1) Faculty of Applied Science, TU Delft, Delft, The Netherlands 2) Institute for Molecules and Materials, Radboud University, Nijmegen, The Netherlands

**14:30** **New dithienylethenes ? polyoxometalates hybrid materials with highly efficient solid-state photochromic properties** **L III.3**
Patricia Bolle (a), Oleh Stetsiuk (a,b), Clotilde Menet (a), Marin Puget (a), Hélène Serier-Brault (a), Marie Cordier (b), Shohei Katao (c), Véronique Guerchais (b), Florent Boucher (a), Tsuyoshi Kawai (c), Julien Boixel (b), Rémi Dessapt (a)
(a) Université de Nantes, CNRS, Institut des Matériaux Jean Rouxel, IMN, F-44000 Nantes, France. , (b) Univ Rennes, CNRS, ISCR ? UMR6226, F-35000, Rennes, France. , (c) Nara Institute of Science and Technology, 8916-5 Takayama, Ikoma, Nara 630-0192, Japan.

**14:45** **Synthesis and optical/thermal reversible photo-switching of AgCl-AgPO3 photochromic composite glass coatings for space applicati** **L III.4**
Marios Adamidis, Ioannis Konidakis, Emmanuel Stratakis
Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology-Hellas (FORTH), 70013 Heraklion-Crete, Greece

**15:00** INV **Physics and crystal chemistry of rare-earth metal oxyhydride systems** **L III.5**
A. Pishtshev*(1), E. Strugovshchikov(2), S. Z. Karazhanov(3)
(1)Institute of Physics, University of Tartu, W.Ostwaldi 1, 50411 Tartu, Estonia,(2) University of Rovira i Virgili, Tarragona, Spain,(3)Department for Solar Energy, Institute for Energy Technology, Kjeller, Norway

**15:30** **Discussion**

### 1 : B. Dam, F. Capon, S. Karazhanov, A. Rougier

**16:00** **Mimicking Nature?s Butterflies: Electrochromic Devices with Dual-Sided Differential Colorations** **L P1.1**
Jian Chen, Zhen Wang, Chenglong Liu, Zhigang Chen, Xueqing Tang, Qi Wu, Shu Zhang, Shan Cong, Qin Chen, Zhigang Zhao*
Key Lab of Nanodevices and Applications, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, Suzhou 215123, China?Key Laboratory of Multifunctional Nanomaterials and Smart Systems, Chinese Academy of Sciences (CAS), 215123 Suzhou, China?Institute of Nanophotonics, Jinan University, Guangzhou 511443, China

**16:00** **Attaining absolute 'private' state by dual stimulation of a thermo-electrochromic single-molecule** **L P1.2**
John Marc C. Puguan, Hern Kim
Department of Energy Science and Technology, Environmental Waste Recycle Institute, Myongji University, Yongin, Gyeonggi-do 17058, Republic of Korea

**16:00** **Development of dual responsive poly(ionic liquid)s for smart window/display application** **L P1.3**
Pramod Vithal Rathod, Hern Kim* Lead Presenter: Pramod Vithal Rathod, Email: pramodrathod1992@gmail.com Corresponding author*: Hern Kim. Email: hernlim@mju.ac.kr
Department of Energy Science and Technology / Environmental Waste Recycle Institute Myongji University, Yongin, Gyeonggi-do 17058, Republic of Korea

**16:00** **Thermochromic Solar Control Coatings on SiO2-Coated Float Glass for Energy-Efficient Smart Windows** **L P1.4**
Yeung, C.P.K.*(1)(2), Habets, R.(1)(2), Leufkens, L.(1)(2), Colberts, F.(3), Stout, K.(3), Verheijen, M.A.(4)(5), Vroon, Z.(1)(2)(3), Mann, D.(1)(2), Buskens, P.(1)(2)(6).
(1) The Netherlands Organisation for Applied Scientific Research (TNO), High Tech Campus 25, 5656AE Eindhoven, The Netherlands. (2) Brightlands Materials Center, Urmonderbaan 22, 6167RD Geleen, The Netherlands. (3) Zuyd University of Applied Sciences, Nieuw Eyckholt 300, 6400AN Heerlen, The Netherlands. (4) Department of Applied Physics, Eindhoven University of Technology, 5600MB Eindhoven, The Netherlands. (5) Eurofins Materials Science, 5656 AE Eindhoven, The Netherlands. (6) Hasselt University (UHasselt), Institute for Materials Research (IMO), DESINe group, Martelarenlaan 42, 3500 Hasselt, Belgium. * lead presenter

**16:00** **Reactive e-beam evaporation of yttrium: A spectral and structural investigation of metallic yttrium, yttrium oxide, and yttrium** **L P1.5**
H.Arslan, I.Aulika, A. Sarakovskis, L.Bikse, J. Gabrusenoks, M. Zubkins, J.Purans
Institute of Solid State Physics, University of Latvia, R?ga LV-1063, Latvia

**16:00** **Characterisation studies of thermochromic VO2 thin films for smart windows applications** **L P1.6**
Ayushi Rai1, Vidar Hansen1, Cristian N. Mihailescu2, and Andreas Delimitis1
1 Department of Mechanical and Structural Engineering and Materials Science, University of Stavanger, PO box 8600, N-4036 Stavanger, Norway 2 National Institute for Laser, Plasma and Radiation Physics, 409 Atomistilor Street, PO Box MG-36, 077125 Magurele, Romania

**16:00** **Optical properties of laminar VO2-TiO2 nanocomposites: implication for thermochromic coatings** **L P1.7**
Belenchuk, A.(1,2), Stroh, K.(3), Shapoval, O.(1,2), Vatavu, S.*(1)
(1) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (2) Solid State Structures Lab, Institute of Electronic Engineering and Nanotechnologies, 3/3 Academiei str., MD 2028, Chisinau, Moldova, (3) I. Institute of Physics, Georg-August University of Göttingen, Friedrich-Hund Platz 1, 37077 Göttingen, Germany

**16:00** **Chromogenic sensor for Candida spp. detection** **L P1.8**
Ana-Maria IORDACHE1, Stefan-Marian IORDACHE1, *, Roxana BOHILTEA2, *, Valentin BARNA3, Constantin RIZEA4, Alexandra MAZLUM4, Valentina CAPATINA5, Cristiana Eugenia Ana GRIGORESCU1
1National Institute of R&D in Optoelectronics, INOE 2000, 409 Atomistilor, 077125, Magurele, Jud. Ilfov, Romania23 2Carol Davila» University of Medicine and Pharmacy Bucharest, 37 DionisieLupu, 020021, Bucharest, Romania 3University of Bucharest, Faculty of Physics,405 Atomistilor, P.O. Box MG-38, 077125, Magurele, Romania 4Roxy Veterinary S.R.L.,52AUnirii Str.,Magurele, 077125, Romania 5MGM Star Construct S.R.L., 7B Pancota Str., Bucharest, Romania

**16:00** **Dopants Concentrations and Mechanical Strength of the Promising Yb,Li:ZnWO4 Crystal** **L P1.9**
Subbotin, K.A.(1 ,2), Titov, A.I.(1,2), Pavlov, S.K.(2,1), Volkov, P.A.(3), Sanina, V.V.(1), Lis, D.A.(1), Lis, O.N.(1), Kuleshova, K.V.(2), Didenko, Y.S.(2) & Zharikov, E.V.(1)
(1)Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia (2)Mendeleyev University of Chemical Technology of Russia, Russia (3)NRC ?Kurchatov Institute? ? IREA Shared Knowledge Center, Russia

**16:00** **Dispersion of Principal Refractive Indices of Monoclinic MgWO4 Laser Host Crystal** **L P1.10**
Subbotin, K.A.* (1, 2), Loiko, P.A. (3), Zimina, Y.I. (2), Kuleshova, K.V (2), Didenko, Y.S. (2), Titov, A.I. (1,2) & Lis, D.A (1).
(1)Prokhorov General Physics Institute, Russian Academy of Sciences, Russia (2) Mendeleev University of Chemical Technology of Russia, Russia (3)Centre de Recherche sur les Ions, les Matériaux et la Photonique (CIMAP), UMR 6252 CEA-CNRS-ENSICAEN, Université de Caen Normandie, France



**Tuesday may 31**

## IV : Smagul Karazhanov &#8211

**09:00** INV **Multi-color changeable polyaniline based polymer and waterproof Prussian blue gasochromic materials** **L IV.1**
Chih-Wei Hu, Kaori Nishizawa, Yasusei Yamada
Innovative Functional Materials Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Japan

**09:30** **Evaluation of solar transmittance properties using dry-deposited trimodal electrochromic/mirror device for Zero-energy building.** **L IV.2**
Sungjun Choi* (1), Jiseon Kim (1), Dongwon Shin (1) and Caroline Sunyong Lee (?,1)
(1) Department of Material science & Chemical engineering in Hanyang University, Korea (? sunyonglee@hanyang.ac.kr)

**09:45** **Hybrid Molybdenum-Tungsten Oxide as ?New Generation? Plasmonic Electrochromic Material for Smart Windows** **L IV.3**
Gillissen, F.*(1,2), Maho, A.(1), De Moor, N.(3), Faceira, B.(4), Lobet, M.(3), Rougier, A.(4), Henrard, L.(3), Cloots, R(1).
(1) Group of Research in Energy and Environment for MATerials (GREEnMAT), University of Liège, Allée du Six Août 13, 4000 Liège, Belgium, (2) FRS ? FNRS, Rue d?Egmont 5, 1000 Bruxelles, Belgium , (3) Laboratoire de Physique du Solide, University of Namur, Rue de Bruxelles 61, 5000 Namur, Belgique , (4) Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), University of Bordeaux, Avenue du Dr Albert Schweitzer 87, 33600 Pessac, France. * lead presenter

**10:00** **Spectrally Selective Electrochromic Devices: from Engineered Nanomaterials to Large Area Prototypes** **L IV.4**
Cots, A. (1)*, Raho, R. (2)a, Dicorato, S. (2)b, Magni, M. (3), González, R.M. (1)c, Martínez, S. (1), Manca, M.(1)
(1) LEITAT Technological Center, c/ de la Innovació, 2, 08225, Terrassa (Bacelona)-SPAIN, (2) IIT-CBN Istituto Italiano di Tecnologia- Center for Biomolecular Nanotechnologies, via Barsanti 14, 73010, Arnesano (Lecce)- ITALY, (3) Università degli Studi di Milano, Dipartamento di Chimica, via Golgi 19, Milano- ITALY, * lead presenter

**10:15** **Development of composites based on metallic nanowires and functional oxides for energy-efficient smart windows** **L IV.5**
A. Ambreen 1,2, A. Sekkat 1, D. Muñoz-Rojas1, D. Bellet 1, A. Rougier 2
1Univ. Grenoble Alpes, CNRS, Grenoble INP, LMGP, 38000 Grenoble, France 2CNRS, Univ. Bordeaux, Bordeaux INP, ICMCB, UMR 5026, F-33600 Pessac, France

**10:30** **Discussion**

## V : Bernard Dam - Juris Purans

**10:45** INV **X-ray absorptions study of chromogenic materials** **L V.1**
Juris Purans
Institute of Solid State Physics, University of Latvia, Kengaraga 8, LV-1063, Riga, Latvia

**11:15** **Innovative Strategies of Colloidal Processing and Electronic Modulation of ITO Nanocrystals as NIR Plasmonic Electrochromics** **L V.2**
Maho, A.* (1), Saez Cabezas, C.A. (2), Gillissen, F. (1), Kim, D.K. (3), Heutz, S. (3), Milliron, D.J. (2), and Cloots, R. (1)
(1) Group of Research in Energy and Environment for Materials (GREENMAT), University of Liège, B6a ? Agora, Allée du Six-Août 13, 4000 Liège, Belgium. (2) McKetta Department of Chemical Engineering, The University of Texas at Austin, Austin, Texas 78712, United States. (3) Department of Materials, Imperial College London, Prince Consort Road, SW7 2AZ London, United Kingdom. * lead presenter

**11:30** **Origin of the memory effect in electrochromic WO3 thin films: crystallinity and stoichiometry issues** **L V.3**
B. Faceira*, L. Teule-Gay, A. Rougier
Université de Bordeaux, CNRS, BxINP, UMR5026, F-33600 Pessac, France

**11:45** **Discussion**

**12:00** **Lunch and Plenary**

## VI : Smagul Karazhanov &#8211

**15:15** INV **Yttrium Oxyhydride (YHO) for Commercial Applications ? Challenges and Perspectives** — **L VI.1**

Elbruz Murat Baba* 1-2 , Chang Chuan You 2, Erik Roenneberg 1, Smagul Karazhanov 2
1 Sunphade AS, Oslo, Norway, 2 Department for Solar Energy, Institute for Energy Technology (IFE), Kjeller, Norway

**15:45** **Modification of CeO2 by doping for glass industry applications: ab-initio study** — **L VI.2**

D. Mamedov, S. Zh. Karazhanov
1) Department for Solar Energy, Institute for Energy Technology, 2027 Kjeller, Norway 2) Department of Materials Science, National Research Nuclear University, 115409 Moscow, Russia, 1) Department for Solar Energy, Institute for Energy Technology, 2027 Kjeller, Norway 2) Department of Materials Science, National Research Nuclear University, 115409 Moscow, Russia

**16:00** **Oxygen-containing yttrium hydride and deuteride thin films: synthesis aspects together with optical and vibrational properties** — **L VI.3**

M. Zubkins, I. Aulika, J. Gabrusenoks, E. Strods, V. Vibornijs, G. Chikvaidze, L. Bikse, A. Sarakovskis, H. Arslan, J. Purans
Institute of Solid State Physics, University of Latvia, Kengaraga 8, LV-1063, Riga, Latvia

**16:15** **New Lanthanide-free polyoxometalates as highly sensitive and reusable photoluminescent solid sensors for water detection** — **L VI.4**

Aurély BAGGHI Philippe DENIARD Hélène SERIER-BRAULT Rémi DESSAPT
Institut des matériaux Jean Rouxel (IMN), UMR 6502 CNRS, Université de Nantes, 2 rue de la Houssinière, BP 32229, 44322 Nantes cedex 3, France

**16:30** **Fluorescent ion-imprinted polymers as sensing materials for lead detection** — **L VI.5**

William René, Véronique Lenoble, Katri Laatikainen, Catherine Branger
William RENE, Université de Toulon, MAPIEM Laboratory, France & Aix Marseille Université, CNRS, IRD, MIO, Toulon, France, Véronique LENOBLE, Aix Marseille Université, CNRS, IRD, MIO, Toulon, France, Katri LAATIKAINEN, Lappeenranta-Lahti University of Technology LUT, School of Engineering Science, Department of Separation Science, Lappeenranta, Finland, Catherine BRANGER, Université de Toulon, MAPIEM Laboratory, France

**16:45** **Discussion and Closing**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM M

## Novel materials for radiation detectors

*Symposium Organizers :*

Jinsong HUANG, University of North Carolina

Laura BASIRICO, University of Bologna

Paul SELLIN, University of Surrey

frontiers | Frontiers in Physics

## Monday may 30

**14:45** **Welcome and Introduction to the Symposium**

### 1 : Paul Sellin

**15:00** INV **Perovskite - a wonder material for X-ray detection** **M 1.1**
Shengzhong (Frank) Liu
1Dalian National Laboratory for Clean Energy, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, P.R. China 2Key Laboratory of Applied Surface and Colloid Chemistry, Ministry of Education, Shaanxi Key Laboratory for Advanced Energy Devices, Shaanxi Engineering Lab for Advanced Energy Technology, School of Materials Science & Engineering, Shaanxi Normal University, Xi'an 710119, P.R. China

**15:30** INV **Developing Advanced Materials for X-ray Imaging and Sensing** **M 1.2**
Xiaogang Liu
National University of Singapore

**16:00** **Heterojunction Structures for Reduced Noise in Large Area, Stable and Sensitive Perovskite X-ray Detectors** **M 1.3**
Ying Zhou, Liang Zhao, Zhenyi Ni, Shuang Xu, Jingjing Zhao, Xun Xiao and Jinsong Huang
Department of Applied Physical Science, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA

**16:15** **Discussion**

### 2 : Laura Basiricò

**16:30** INV **Solution-processed perovskites for medical flat panel X-ray detectors** **M 2.1**
Eric Gros-Daillon
CEA-Leti, Université Grenoble Alpes, F-38000 Grenoble, France

**17:00** INV **High resolution and high sensitivity X-ray detectors with soft-sintered organometal halide perovskites** **M 2.2**
Dr. Sandro F. Tedde, Judith Hürdler, Sarah Deumel, and Dr. Oliver Schmidt
Siemens Healthineers, Technology Excellence, Erlangen, 91058, Germany.

**17:30** **High Sensitivity CsPbBr3 X-ray Detectors Fabricated Using Scalable Field Assisted Sintering Technology** **M 2.3**
Justin Reiss, Stephanie Bennett, Suad Alghamdi, Dr. Carol Crean, Prof. Paul Sellin, and Prof. Douglas Wolfe
Justin Reiss Applied Research Laboratory, The Pennsylvania State University, USA, Stephanie Bennett Department of Physics, University of Surrey, UK, Suad Alghamdi Department of Physics, University of Surrey, UK, Carol Crean Department of Chemistry, University of Surrey, UK, Paul Sellin Department of Physics, University of Surrey, UK, Douglas Wolfe Applied Research Laboratory, The Pennsylvania State University, USA,

**17:45** **All-inorganic Cs2AgBiBr6 double perovskite single crystals for X-Ray detectors** **M 2.4**
Nazire Simay Sahsuvar *(1), Valeria Murgulov (1), Catherine Schweinle (2), Michael Daub (1) (2), Harald Hillebrecht (1) (2), Michael Fiederle (1).
(1) Freiburg Materials Research Center, Albert-Ludwigs-Universität Freiburg, Stefan-Meier-Str. 21, 79104 Freiburg im Breisgau, Germany, valeria.murgulov@fmf.uni-freiburg.de (V.M.), michael.daub@ac.uni-freiburg.de (M.D.), harald.hillebrecht@ac.uni-freiburg.de (H.H.), michael.fiederle@fmf.uni-freiburg.de (M.F.). (2) Institute of Inorganic and Analytical Chemistry, Faculty of Chemistry and Pharmacy, Albert-Ludwigs-Universität Freiburg, Albert Str. 21, 79104 Freiburg im Breisgau, Germany, C-Schweinle@web.de (C.S.). * simay.sahsuvar@fmf.uni-freiburg.de

**18:00** **Discussion**



## Tuesday may 31

**14:50** **Welcome to Day 2**

### 3 : Paul Sellin

**15:00** INV **Organic and Hybrid films as platform for Large-area and Flexible Direct Detection of Ionizing Radiation** **M 3.1**
Andrea Ciavatti
Department of Physics and Astronomy, University of Bologna, Italy

**15:30** INV **RAdiation Detectors based on Organic Field-Effect Transistors (RAD-OFETs)** **M 3.2**
Oana D. Jurchescu
Oana D. Jurchescu, Department of Physics and Center for Functional Materials, Wake Forest University, Winston Salem, NC 27109, USA

**16:00** **CsPbCl3 inorganic perovskite thin film detectors under high energy proton beams** **M 3.3**
Mara Bruzzi1,2 , Nicola Calisi3, Carlo Civinini2, Enrico Verroi4, Anna Vinattieri1,2
1Dipartimento di Fisica e Astronomia, Università degli Studi di Firenze, Via G. Sansone 1, 50019 Sesto Fiorentino (FI) Italy, 2 I.N.F.N. Sezione di Firenze Via G. Sansone 1, 50019 Sesto Fiorentino (FI) Italy, 3 Dipartimento di Ingegneria Industriale, Università degli Studi di Firenze, Via S. Marta, 50139 Firenze Italy, 4 TIFPA, Trento Italy 4 TIFPA, Trento Italy

**16:15** **Discussion**

### 4 : Laura Basiricò

**16:30** INV **Organic semiconductors for ionising radiation dosimetry in medical applications** **M 3.4**
Matthew J. Large,1 Jessie A. Posar,1 Attila J. Mozer,2 Saree Alnaghy,1 Martin Carolan,1, 3, 4, P.J. Sellin6, Justin Davies,7 Zeljko Pastuovic,7 Michael L. F. Lerch,1 Anatoly B. Rosenfeld,1 Matthew J. Griffith,5 and Marco Petasecca1
1Centre for Medical Radiation Physics (CMRP), University of Wollongong, Wollongong, NSW, 2522, Australia, 2ARC Centre of Excellence for Electromaterials Science (ACES), Intelligent Polymer Research Institute (IPRI), University of Wollongong, Wollongong, NSW, 2522, Australia, 3Illawarra Cancer Care Centre, Wollongong Hospital, Wollongong, NSW, 2500, Australia, 4Illawarra Health and Medical Research Institute (IHMRI), University of Wollongong, Wollongong, NSW, 2522, Australia, 5School of Aerospace, Mechanical and Mechatronic Engineering, University of Sydney, Camperdown, NSW, 2006, Australia, 6 Department of Physics, University of Surrey, Guildford, Surrey GU2 7XH UK, 7Australian Nuclear Science and Technology Organisation, New Illawarra Rd, Lucas Heights NSW 2234, Australia.

**17:00** INV **Hadronic radiation detection using solid state organic devices** **M 4.2**
Adrian Bevan
(1) Department of Physics and Astronomy, Queen Mary University of London, UK
(2) Alan Turing Institute, UK

**17:30** **Stable near-to-ideal performance of a solution-grown single-crystal perovskite X-ray detector** **M 4.3**
Kostiantyn Sakhatskyi, Bekir Turedi, Gebhard Matt, Muhammad Lintangpradipto, Rounak Naphade, Omar Mohammed, Sergii Yakunin, Osman Bakr, Maksym Kovalenko
Kostiantyn Sakhatskyi - ETH Zurich, Bekir Turedi - King Abdullah University of Science and Technology, Gebhard Matt - ETH Zurich, Muhammad Lintangpradipto - King Abdullah University of Science and Technology, Rounak Naphade - King Abdullah University of Science and Technology, Omar Mohammed - King Abdullah University of Science and Technology, Sergii Yakunin - ETH Zurich, Osman Bakr - King Abdullah University of Science and Technology, Maksym Kovalenko - ETH Zurich

**17:45** **High performance, high yield solution-grown FACsPbBr3 single crystals for gamma-ray spectroscopy** **M 4.4**
Liang Zhao, Ying Zhou, Zhifang Shi, Zhenyi Ni, Jinsong Huang
Department of Applied Physical Sciences, University of North Carolina at Chapel Hill, USA

**18:00** **Discussion**

**Wednesday june 1**

**14:50** **Welcome to Day 3**

**5 : Jinsong Huang**

**15:00** INV **High-resolution room temperature gamma-ray detection with CsPbBr3 perovskite** **M 5.1**
Mercouri G Kanatzidis
Department of Chemistry, Northwestern University, Evanston, IL 60208, USA

**15:30** INV **Investigation on CsPbBr3 Detectors: from Leakage Current and Charge Transport Behaviors to Contact and Configuration** **M 5.2**
Yadong Xu 1,2*, Yingying Hao1, Xin Zhang1, Fangpei Li1, Ruichen Bai1, Qihao Sun1, Menghua Zhu1, Wanqi Jie1,2
1MIIT Key Laboratory of Radiation Detection Materials and Devices, and 2State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China

**16:00** **Extreme γ-ray radiation hardness and high scintillation yield in perovskite nanocrystals** **M 5.3**
Matteo L. Zaffalon, Francesca Cova, Mingming Liu, Alessia Cemmi, Ilaria Di Sarcina, Carmelita Rodà, Mauro Fasoli, Francesco Meinardi, Liang Li, Anna Vedda, Sergio Brovelli
1. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano – Bicocca, Milano, Italy, 2. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano – Bicocca, Milano, Italy, 3. School of Environmental Science and Engineering, Shanghai Jiao Tong University, 800 Dongchuan Road, 200240 Shanghai, P.R. China, 4. ENEA Fusion and technology for nuclear safety and security department, Casaccia R.C:, Via Anguillarese 301, 00123 Rome, Italy, 5. ENEA Fusion and technology for nuclear safety and security department, Casaccia R.C:, Via Anguillarese 301, 00123 Rome, Italy, 6. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy, 7. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano – Bicocca, Milano, Italy, 8. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy, 9. School of Environmental Science and Engineering, Shanghai Jiao Tong University, 800 Dongchuan Road, 200240 Shanghai, P.R. China, 10. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano – Bicocca, Milano, Italy, 11. Dipartimento di Scienza dei Materiali, Università degli Studi Milano - Bicocca, via R. Cozzi 55, IT-20125 Milano, Italy & Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano – Bicocca, Milano, Italy,

**16:15** **Discussion**

**Section 6 : Jinsong Huang**

**16:30** INV **Understanding and manipulating of radiation induced triplet states for efficient X-ray scintillation and imaging.** **M 6.1**
Yang Yang (Michael)
State Key Laboratory of Modern Optical Instrumentation, College of Optical Science and Engineering, Zhejiang University, Hangzhou, Zhejiang 310027, China.

**17:00** **Discussion**

**7: Poster session : Paul Sellin**

**17:10** **Orthorhombic Cesium Plumboiodide for Sensitive High-Resolution X-ray Detectors** **M 7.1**
Makhsud I. Saidaminov
University of Victoria, Canada

**17:10** **Growth and Characterization of Large Single-Crystal Lead Halide Perovskites for X-ray Detector Development** **M 7.2**
M. Niraula, Y. Nakashima, Y. Takagi, R. Okumura, and K. Yasuda
Dept. Electrical and Mechanical Engineering, Graduate School of Engineering, Nagoya Institute of Technology, Gokiso, Showa, Nagoya 466-8555, Japan



**17:10** **Synthesis of morphology controlled Hf-halide double perovskite and Lu-hydroxy-halide luminescent nano/micro-particles** **M 7.3**
Madeleine Fellner, Alessandro Lauria
ETH Zurich, Department of Materials, Laboratory of Multifunctional Materials, Vladimir-Prelog-Weg 5, 8093 Zurich

**17:10** **MAPb(Br1-xClx)3 perovskite materials and influence of environment during crystal growth for direct X-ray detection** **M 7.4**
Javier Mayén Guillén, Giovanni Armaroli, Ferdinand Lédée, Oriane Baussens, Marian Chapran, Jean-Marie Verilhac, Eric Gros D'Aillon, Alain Ibanez, Julien Zaccaro
Javier Mayén Guillén – Grenoble Alpes University, CEA, LITEN, DTNM, F38000 Grenoble, France Giovanni Armaroli – Department of Physics and Astronomy, University of Bologna, 40127 Bologna, Italy Ferdinand Lédée – Grenoble Alpes University, CEA, LETI, DOPT, F38000 Grenoble, France Oriane Baussens – Grenoble Alpes University, CEA, LETI, DOPT, F38000 Grenoble, France Marian Chapran – Grenoble Alpes University, CEA, LETI, DOPT, F38000 Grenoble, France Jean-Marie Verilhac – Grenoble Alpes University, CEA, LITEN, DTNM, F38000 Grenoble, France Eric Gros D'Aillon – Grenoble Alpes University, CEA, LETI, DOPT, F38000 Grenoble, France Alain Ibanez – Grenoble Alpes University, CNRS, Grenoble INP, Institut Néel, F38042 Grenoble, France Julien Zaccaro – Grenoble Alpes University, CNRS, Grenoble INP, Institut Néel, F38042 Grenoble, France

**17:10** **Novel sustainable and flexible composite neutron detector based on fully enriched lithium tetraborate.** **M 7.5**
Jessica Delgado, Felix Pino, Sara Maria Carturan, Giorgia Mantovani, Matteo Polo, Daniela Fabris, and Sandra Moretto.
Dipartimento di Fisica e Scienze della Terra, University of Ferrara, Ferrara, 44122, Italy, Department of Physics and Astronomy "Galilei", University of Padova, Padova, 35121, Italy, INFN-Laboratori Nazionali di Legnaro, Legnaro, 35020, Italy, INFN-Padova Section, Padova, 35131, Italy.

**17:10** **Organic additives for stabilizing low-dimensional hybrid perovskites incorporated in sensor and related devices** **M 7.7**
Anna Ioannou, A.I.* (1), Ufuk Yilmaz, U.Y. (2), Georg Ramer, G.R. (2), Bernhard Ledl, B.L. (2), Ioannis Koutselas, I.K. (1)
(1) Department of Materials Science, University of Patras, Greece (2) Institute of Chemical Technologies and Analytics, Technische Universität Wien, Austria

**17:10** **Development and understanding of highly efficient MOF composite scintillators** **M 7.8**
Hayden Salway * (1), Elena Avila (1), Samuel Stranks (1), David Fairen-Jimenez (1), Miguel Anaya (1).
(1) Department of Chemical Engineering and Biotechnology, University of Cambridge, Philippa Fawcett Drive, Cambridge, CB3 0AS UK * Lead presenter

**17:10** **Bias-modulated spectral-selective perovskite/organic hybird photodetector** **M 7.9**
Suen Chun Wai, Cai Linfeng, Zhu Furong
Department of Physics, Research Centre of Excellence for Organic Electronics, and Institiue of Advanced Materials, Hong Kong Baptist University

**17:10** **Direct Detection of 5-MeV protons by Flexible Thin-Film devices based on Organic Semiconductors** **M 7.10**
Ilaria Fratelli (1)(2), Andrea Ciavatti (1)(2), Enrico Zanazzi (3)(4), Laura Basiricò (1)(2), Massimo Chiari (5), Laura Fabbri (1)(2), John E. Anthony (6), Alberto Quaranta (3)(4) and Beatrice Fraboni (1)(2)
1) Department of Physics and Astronomy, University of Bologna, Bologna, Italy, 2) National Institute of Nuclear Physics (INFN), Section of Bologna, Bologna, Italy, 3) Department of Industrial Engineering, University of Trento, Via Sommarive 9, I-38123 Povo, Trento, Italy, 4) INFN-TIFPA, Via Sommarive 14, I-38123 Povo, Trento, Italy, 5) INFN-Florence, Via G. Sansone 1, 50019 Sesto Fiorentino, Florence, Italy, 6) Department of Chemistry and Center for Applied Energy Research, University of Kentucky, Lexington, KY 40506, USA.

**17:10** **Lead Bromide Perovskite thin films and single crystals based devices** **M 7.11**
Marianna Testa, Luisa De Marco, Matthias Auf der Maur, Fabio Matteocci, Ilenia Viola, Silvio Morganti, Chiara Rovelli, Antonio De Santis, Silvia Rizzato, Leonardo Lo Presti
Marianna Testa LNF-INFN, Luisa De Maro CNR-Nanotec, Matthias Auf Der Maur Electronic Engineering Department Tor Vergata University, Fabio Matteocci Electronic Engineering Department Tor Vergata University, Ilenia Viola CNR-Nanotec, Silvio Morganti Roma1-INFN, Chiara Rovelli Roma1-INFN, Antonio De Santis LNF-INFN, Silvia Rizzato Department of Chemistry Università degli Studi di Milano, Leonardo Lo Presti Department of Chemistry Università degli Studi di Milano

**17:10** **Unconventional two-dimensional CsPb2Br5 perovskite single crystals for enabling radiation detection** **M 7.12**
Saqr Alshogeathri, Da Cao, Bryant Kanies, Ge Yang
Department of Nuclear Engineering, North Carolina State University 2500 Stinson Drive, Raleigh, NC 27695-7909, USA Contact Emails: Ge Yang (gyang9@ncsu.edu), Saqr Alshogeathri (salshog@ncsu.edu)

**17:10** **Synthesis and characterisation of lead-free double perovskite scintillators for nanocomposite applications** **M 7.13**
Joseph O'Neill, Suad Alghamdi, Stephanie Bennett, Isabel Braddock, Carol Crean, Joydip Ghosh, Caroline Shenton-Taylor, Paul Sellin [1], Sion Richards, Matthew Wilson [2]
[1] University of Surrey, [2] Rutherford Appleton Laboratory

**17:10** **A perovskite-enhanced photogating type X-ray detector.** **M 7.14**
Guan-Hua Dun1,2,#, Ken Qin1,2,#, Xiang-Shun Geng1,2, Yuan-Yuan Li1,2, Dan Xie1,2,*, He Tian1,2,*, Yi Yang1,2,* and Tian-Ling Ren1,2,*. #These authors contributed equally to this work. *Email: RenTL@tsinghua.edu.cn, yiyang@tsinghua.edu.cn, tianhe88@tsinghua.edu.cn, xiedan@tsinghua.edu.cn
1 School of Integrated Circuits, Tsinghua University, Beijing 100084, China. 2 Beijing National Research Center for Information Science and Technology (BNRist), Tsinghua University, Beijing 100084, China.

**17:10** **Basic properties of point defects in halide perovskites derived from analysis of the corresponding binary metal halides** **M 7.15**
A.I. Popov (1), E.A. Kotomin (1,2), J. Maier (2)
(1) Institute of Solid State Physics, University of Latvia, Riga, Latvia, (2) Max Planck Institute for Solid State Research, Stuttgart, Germany

**17:10** **Solution Processed Lead-Free Double Perovskite Single crystal for X-ray Detection** **M 7.16**
Naveen Kumar Tailor1, Joydip Ghosh2, Mohammad Adil Afroz1, Paul Sellin2, Soumitra Satapthi1
1Department of Physics, Indian Institute of Technology Roorkee, Roorkee, 247667, India 2Department of Physics, University of Surrey, Guildford GU2 7XH, United Kingdom

**17:10** **Polarized photodetectors based on oriented organic semiconductors: Fabrication, dark-current suppression and applications** **M 7.17**
Aleksandr Perevedentsev1,2, Hadhemi Mejri1,2, Luis A. Ruiz-Preciado1,2, Tomasz Marszalek3, Uli Lemmer1,4, Paul W. M. Blom3, Gerardo Hernandez-Sosa1,2,4
1. Light Technology Institute, Karlsruhe Institute of Technology, 76131 Karlsruhe, Germany, 2. InnovationLab, 69115 Heidelberg, Germany, 3. Max Planck Institute for Polymer Research, 55128 Mainz, Germany, 4. Institute of Microstructure Technology, Karlsruhe Institute of Technology, 76344 Eggenstein-Leopoldshafen, Germany



**Thursday june 2**

**14:50** **Welcome to Day 4**

## 8 : Laura Basiricò

**15:00** INV **Exploration of metal halides for indirect and direct X-ray detection** **M 8.1**
Jiang Tang, Guangda Niu
Huazhong University of Science and Technology

**15:30** INV **Benefits and challenges of charge transport in halide perovskites** **M 8.2**
Artem Musiienko
Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Institut für Silizium Photovoltaik

**16:00** **Impact of X-ray irradiation on the excitonic properties of lead halide perovskite single crystals** **M 8.3**
Giovanni Armaroli (1), Laura Ferlauto (1,2), Ferdinand Lédée (1,2), Matilde Lini (1), Andrea Ciavatti (1), Alessandro Kovtun (3), Francesco Borgatti (4), Gabriele Calabrese (5), Silvia Milita (5), Beatrice Fraboni (1), and Daniela Cavalcoli (1)
1: Department of Physics and Astronomy, University of Bologna, Viale Berti Pichat 6/2, 40127, Bologna, Italy, 2: Interdepartmental Center for Industrial Research of the University of Bologna (CIRI-MAM), Viale Risorgimento 2, 40136, Bologna, Italy, 3: Institute of Organic Synthesis and Photoreactivity - (CNR-ISOF), Via Gobetti 101, 40129, Bologna, Italy, 4: Institute for Nanostructured Material Study (CNR – ISMN), Via Piero Gobetti 101, 40129, Bologna, Italy, 5: Institute for Microelectronics and Microsystems (CNR – IMM), Via Piero Gobetti 101, 40129, Bologna, Italy

**16:15** **Discussion**

## 9 : Jinsong Huang

**16:30** INV **Recent progress in metal halide perovskite radiation detectors** **M 9.1**
Eric Lukosi1-2, Ryan Tan1-2, Jessica Charest1-2, Bogdan Dryzhakov2-3, Chris Busch1-2, Lance Drouet1-2, Owen Johnson1-2, Jeonghee Yang2-3, Zachary Dancoes4, Praneeth Kandlakunta4, Lei Cao4,Bin Hu2-3, Mahshid Ahmadi2-3
[1] Department of Nuclear Engineering, University of Tennessee, Knoxville, TN 37996,[2] Institute of Advanced Materials and Manufacturing, University of Tennessee, Knoxville, TN, 37996, [3] Department of Materials Science Engineering, University of Tennessee, Knoxville, TN 37996, [4] Nuclear Engineering, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH 43210

**17:00** INV **Recent progress of lead-free perovskite radiation detectors** **M 9.2**
Xiangshun Geng, Yu-Ang Chen, Guan-Hua Dun, Yuan-Yuan Li, Dan Xie, Tian-Ling Ren
School of Integrated Circuit & Beijing National Research Center for Information Science and Technology (BNRist), Tsinghua University, Beijing 100084, China

**17:30** **Ultra-Stable and Robust Response to X-Rays in 2D Layered Perovskite Micro-Crystalline Films Directly Deposited on Flexible Subst** **M 9.3**
Ferdinand Lédée (1), Matteo Verdi* (1,2), Andrea Ciavatti (1,2), Laura Basiricò (1,2), and Beatrice Fraboni (1,2)
(1) Department of Physics and Astronomy, University of Bologna, Bologna, Italy (2) National Institute for Nuclear Physics-INFN section of Bologna, Bologna, Italy

**17:45** **Two-dimensional (2D) Perovskite Single Crystals for Efficient and Stable X-Ray Detection** **M 9.4**
Yukta1, Joydip Ghosh2, Mohammad Adil Afroz1, Paul Sellin2, Soumitra Satapathi1
1Department of Physics, Indian Institute of Technology Roorkee, Roorkee, Haridwar, Uttarakhand, 247667, India 2 Department of Physics, University of Surrey, Guildford GU2 7XH, United Kingdom

**18:00** **Discussion and Closing with award of student prizes**

# SYMPOSIUM N

## Synthesis, processing and characterization of nanoscale multi functional oxide films VIII and 6th E-MRS & MRS-J bilateral symposium

*Symposium Organizers :*

Fabio MILETTO GRANOZIO, CNR-SPIN

Hiroaki NISHIKAWA, Kindai University

Maryline GUILLOUX-VIRY, University of Rennes 1

Nobuyuki IWATA, College of Science & Technology, Nihon University

Samuel S. MAO, University of California at Berkeley

Tetsuya YAMAMOTO, Kochi University of Technology

Valentin CRACIUN, INFLPR

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### Growth of thin films : V Craciun, T. Yamamoto

**09:00** INV **Growth Mechanism of mist CVD** N 1.1
Toshiyuki Kawaharamura
Kochi Univ. of Tech., Res. Inst., Kochi Univ. of Tech, Japan

**09:30** **Crystallinity Spread of Compositionally Graded Na1 xTaO3 δ Fabricated by Chemical Beam Vapor Deposition** N 1.2
Corrado Garlisi (1), Petru Lunca Popa (1), Kevin Menguelti (1), Vincent Roge (1), Marc Michel (1), Estelle Wagner (2), William Maudez (2), Giacomo Benvenuti (2), Bianca Rita Pistillo (1), Emanuele Barborini (1).
(1) Materials Research and Technology (MRT) Department, Luxembourg Institute of Science and Technology (LIST), L-4422 Belvaux, Luxembourg. (2) 3D-Oxides, F-01630, Saint-Genis-Pouilly, France.

**09:45** **Spectroscopic study of thermochromic SmNiO3 thin films synthesized by magnetron sputtering with a soft air post-annealing** N 1.3
Zil Fernández-Gutiérrez *(a), Stéphanie Bruyère (a), Emile Haye (b), David Pilloud (a), Silvère Barrat (a), Fabien Capon (a)
(a) Université de Lorraine, CNRS, IJL, F-54000 Nancy, France (b) Laboratoire d'Analyse par Réactions Nucléaires (LARN), Namur Institute of Structured Matter (NISM) University of Namur, 61 Rue de Bruxelles , 5000 Namur, Belgium

**10:00** **Spatial Atomic Layer Deposition of Tubular Membranes** N 1.4
Fidel Toldra-Reig, Clément Lausecker, Matthieu Weber, Mikhael Bechelany, David Muñoz-Rojas
Université Grenoble Alpes, CNRS, Grenoble INP, LMGP, F-38000 Grenoble, France (Fidel Toldra-Reig, Clément Lausecker, Matthieu Weber, David Muñoz-Rojas) Institut Européen des Membranes, IEM, UMR-5635, Université de Montpellier, CNRS, ENSCM, Place Eugène Bataillon 34095 Montpellier cedex 5, France (Clément Lausecker, Mikhael Bechelany)

**10:15** **Optimization of low-cost spray pyrolysis for producing high-quality FTO films following a Design of Experiments methodology** N 1.5
M. Monteiro (1), J. R. S. Barbosa (1), D. Mesquita (1,2), J. A. M. Eriksson (1,3), C. Matos (1,4), A. J. N. Oliveira (1,5,6), K. Oliveira (1), A. Vilanova* (1), P. A. Fernandes (1,5,7) & P. M. P. Salomé (1,6) *presenting person
(1) INL ? International Iberian Nanotechnology Laboratory, Avenida Mestre José Veiga, 4715-330 Braga, Portugal, (2) Departamento de Engenharia, Universidade do Minho, Campus de Azurém, 4800?058 Guimarães, Portugal, (3) Biology Education Centre, Uppsala University, Norbyvägen 14, 752 36 Uppsala, Sweden, (4) Departamento de Ciências dos Materiais, Nova School of Science and Technology, Universidade NOVA de Lisboa, 2829-516 Caparica, Portugal, (5) i3N, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal, (6) Departamento de Física, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal, (7) CIETI, Departamento de Física, Instituto Superior de Engenharia do Porto, Instituto Politécnico do Porto, 4200-072, Porto, Portugal,

**10:30** **Discussion**

### Advanced characterization techniques : V Craciun

**10:45** INV **Schottky barriers on ZnO: Fermi level pinning by bulk and interface defects, influence of polarization and tunability** N 2.1
Andreas Klein
Technical University of Darmstadt, Institute of Materials Science, 64287 Darmstadt, Germany

**11:15** **Using XPS and ToF-SIMS to Investigate ALD Prepared La Doped HfO2 Thin Films Deposited on a Lateral High Aspect Ratio Structure** N 2.2
Jennifer Emara, Alireza M. Kia, Clemens Mart, Kati Kühnel, Nora Haufe, Wenke Weinreich
Fraunhofer IPMS, An der Bartlake 5, Dresden 01109, Germany

**11:30** **Structural and chemical state analysis of amorphous and crystalline manganese oxide phases by combining XRD, RBS, XPS, HAXPES an** N 2.3
Roberto Cestaro*, Bastian Rheingans, Claudia Cancellieri, Lars P.H. Jeurgens, Patrik Schmutz
Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Joining Technologies and Corrosion, CH-8600 Dübendorf, Switzerland



**11:45** **Grain to grain heterogenities in PbZrTiO3 thin film as probed by in-situ biasing XRD** N 2.4
Kien Nguyen, Steven Leake, Patrice Gergaud, Nicolas Vaxelaire
Kien Nguyen, Patrice Gergaud, Nicolas Vaxelaire Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France Steven Leake ESRF, The European Synchrotron, 71 Avenue des Martyrs, CS40220, CEDEX 9, 38043 Grenoble, France

**12:00** **Ferromagnetism in Nd2NiMnO6/La2NiMnO6 superlattices grown by RHEED-enabled sputtering** N 2.5
Jonathan Spring, Simon Joehr, Marta Gibert
University of Zurich, Switzerland, University of Zurich, Switzerland, Technical University of Vienna, Austria

**12:15** **Discussion and Lunch**

### Ferroelectric thin films I : Maryline Guilloux-Viry

**13:45** INV **Ferroelectric two-dimensional electron gases** N 3.1
Manuel Bibes
Unité Mixte de Physique CNRS/Thales, Université Paris-Saclay, 91767 Palaiseau, France

**14:15** **Atomic scale identification of the polarisation reversal mechanism in multiferroic gallium ferrite thin films** N 3.2
X. Devaux (1), C. Bouillet (2), S. Homkar (2), S. Migot (1), A. Demchenko(2), Ch. Lefevre (2), F. Roulland (2), D. Preziosi (2), N. Viart (2)
(1) Université de Lorraine, CNRS, Institut Jean Lamour (IJL), Nancy, France (2) Université de Strasbourg, CNRS, Institut de Physique et Chimie des Matériaux de Strasbourg (IPCMS), Strasbourg, France

**14:30** **Ferroelectric Ge-doped HfO2 by HfO2 capping** N 3.3
Catalin Palade (1), Ana-Maria Lepadatu (1), Adrian Slav (1), Ovidiu Cojocaru (1,2), Alin Iuga (1), Valentin Adrian Maraloiu (1), Antoniu Moldovan (3), Maria Dinescu (3), Valentin Serban Teodorescu (1,4), Toma Stoica (1), Magdalena Lidia Ciurea (1,4)
(1) National Institute of Materials Physics, 077125 Magurele, Romania, (2) University of Bucharest, Faculty of Physics, 077125 Magurele, Romania, (3) National Institute for Laser, Plasma and Radiation Physics, 077125 Magurele, Romania, (4) Academy of Romanian Scientists, 050094 Bucharest, Romania

**14:45** **Thickness-independence of the characteristic AFE domain dimensions in PbZrO3 epitaxial thin-films determined by X-ray nanoscopy** N 3.4
Jamil E. Flores Gonzales (1), Alexander E. Ganzha (1), Maria A. Knyazeva (1), Daria A. Andronikova (1), Alexander F. Vakulenko (1), Arvind Dasgupta (2), Ran Gao (2), Carlsten Richter (3) and Roman G. Burkovsky (1)
1. Peter the Great St.Petersburg Polytechnic University, St.Petersburg, Russian Federation. 2. Materials Science and Engineering, University of California, Berkeley, Berkeley, CA, United States. 3. Leibniz Institute for Crystal Growth, Berlin, Germany.

**15:00** **Tailoring the electronic properties of perovskite nickelate thin films through ferroelectric field effects** N 3.5
G. Krieger1, C. P. Su2, L. Schlur1, R. Fan3, P. Steadman3, A. Gloter2, N. Viart1 and D. Preziosi1
1 Université de Strasbourg, CNRS, IPCMS, UMR 7504, F-67000 Strasbourg, France. 2 Laboratoire de Physique des Solides, CNRS, UMR 8502, Université Paris-Sud, F-91405 Orsay Cedex, France. 3 Diamond Light Source Ltd., Harwell Science and Innovation Campus, Chilton, Didcot, Oxfordshire OX11 0DE, United Kingdom.

**15:15** **Discussion**

### Ferroelectric thin films II : M Bibes

**15:30** **Band structure tuning at (La,Sr)MnO3 / (Ba,Sr)TiO3 interface** N 4.1
J. Wolfman (1), A. Ruyter (1), B. Negulescu (1), P. Andreazza (2), X. Wallart (3), S. Schamm-Chardon (4), R. Cours (4), T. Hungria (5) and C. Autret-Lambert (1)
1 GREMAN, UMR7347 CNRS, Univ. de Tours, Parc de Grandmont, F-37200 Tours, France, 2 ICMN, UMR 7374 CNRS, Univ. d'Orléans, 1b rue de la Férollerie, F-45071 Orléans, France, 3 Univ. Lille, CNRS, Centrale Lille, ISEN, Univ. Valenciennes, UMR 8520 -IEMN, F-59000 Lille, France, 4 CEMES-CNRS and Univ. de Toulouse, 29 rue Marvig, BP 94347, 31055 Toulouse Cedex, France, 5 Centre Raimond Castaing et Univ. de Toulouse, 3, rue Caroline Aigle, 31400 Toulouse, France,

**15:45** **Shallow electron traps in ferroelectric HfO2 and HfZrO4** N 4.2
Izmailov, R.A.*(1), O'Sullivan, B.J.(2), Popovici, M.I.(2) & Afanas'ev, V.V(1)
(1)KU Leuven, Belgium, (2)imec, Belgium

**16:00** **How to play on the fabrication process of HfZrO2 ferroelectric thin film to enhance its physical properties** **N 4.3**
Jordan Bouaziz, Greta Segantini, Benoit Manchon, Rabei Barhoumi, Ingrid Canero Infante, Damien Deleruyelle, Nicolas Baboux, Pedro Rojo Romeo, Bertrand Vilquin
Université de Lyon, Ecole centrale de Lyon, INSA Lyon, CNRS, Institut des nanotechnologies de Lyon UMR 5270, 69130 Ecully, France

**16:15** **Tailoring polar domains in Sr1-xBaxMnO3-δ epitaxial thin films** **N 4.4**
Panagiotis Koutsogiannis, Pedro A. Algarabel, José A. Pardo and César Magén
1. Instituto de Nanociencia y Materiales de Aragón (INMA), CSIC-Universidad de Zaragoza, 50009 Zaragoza, Spain 2. Laboratorio de Microscopías Avanzadas (LMA), Universidad de Zaragoza, 50018 Zaragoza, Spain 3. Departamento de Física de la Materia Condensada, Universidad de Zaragoza, 50018 Zaragoza, Spain 4. Departamento de Ciencia y Tecnología de Materiales y Fluidos, Universidad de Zaragoza, 50018 Zaragoza, Spain

**16:30** **Micro/nanostructured piezoelectric α-quartz thin films on silicon** **N 4.5**
David Sánchez-Fuentes* (1), Q. Zhang (1), C. Jolly (1), R. Desgarceaux (1), A. Gomez (2), M. Gich, (2) A.Carretero-Genevrier. (1)
(1) Institut d'Electronique et des Systemes (IES), CNRS, Université de Montpellier, 860 Rue de Saint Priest 34095 Montpellier, France (2) Institut de Ciència de Materials de Barcelona ICMAB, Consejo Superior de Investigaciones Científicas CSIC, Campus UAB 08193 Bellaterra, Catalonia, Spain * lead presenter

**16:45** **Discussion**



**Tuesday may 31**

## Functional films : N Iwata

**09:00** INV **Functional oxide thin films grown on two-dimensional material toward transferable electronics** **N 5.1**
Hidekazu Tanaka*(1), Shingo Genchi (1), Ai I. Osaka (1), Azusa N. Hattori (1), Kenji Watanabe (2), Takashi Taniguchi (2)
(1) SANKEN (Institute of Scientific and Industrial Research), Osaka University (2) International Center for Materials Nanoarchitectonics, National Institute for Materials Science

**09:30** **N:BaTiO3 oxynitride epitaxial thin films for integrated opto-electronics** **N 5.2**
Blaess, C. *(1), Matzen, S.(2), Lin, H.(1), Creutzer, G.(1), Derj, A.(1), Magnan, H.(1), Moussy, J-B.(1), Mocuta, C.(3), Charra, F.(1), Silly, M.(3) & Barbier, A.(1).
(1) Service de Physique de l'Etat Condensé, UMR 3680 CEA-CNRS, Gif-sur-Yvette, France (2) Center for Nanoscience and Nanotechnology (C2N) UMR CNRS – Paris-Saclay University, Palaiseau, France (3) Synchrotron SOLEIL, L'Orme des Merisiers Saint-Aubin BP48, Gif-sur-Yvette, France

**09:45** **Infinite layered nickelates structure and magnetism** **N 5.3**
Alvaro Adrian Carrasco Alvarez, Sebastien Petit, Lucia Iglesias, Wilfrid Prellier, Manuel Bibes, Julien Varignon
(1) (2) , (1) , (2) , (1) , (2) , (1) (1) Laboratoire CRISMAT, CNRS UMR 6508, ENSICAEN, Normandie Universite,6 boulevard Marechal Juin, F-14050 Caen Cedex 4, France (2) Unite Mixte de Physique, CNRS, Thales, Universite Paris Sud,Universite Paris-Saclay, F-91767 Palaiseau, France

**10:00** **Infinite-layer nickelate: the influence of the capping-layer through the study of physical properties** **N 5.4**
Guillaume Krieger, Jérôme Robert, Gilles Versini, Nathalie Viart, Daniele Preziosi
Institut de Physique et Chimie des Matériaux de Strasbourg, Strasbourg, France

**10:15** **Impact of grain orientation on the local magnetic properties of through Combinatorial Substrate Epitaxy approach.** **N 5.5**
Marie EL RAMI *(1), Marie DALLOCCHIO(1), Adrian DAVID(1), Ulrike LUDERS(1), Rosine COQ GERMANICUS(1), Wilfrid PRELLIER(1), Antoine RUYTER(1), Arnaud FOUCHET(1).
(1) NORMANDIE UNIV, ENSICAEN, UNICAEN, CNRS, CRISMAT, 14000 CAEN, FRANCE. * lead presenter

**10:30** **Discussion**

## Functional films II : Tanaka Hidekazu

**10:45** **Floating solar-activated TiO2 nano-photocatalysts grown on cork for water purification** **N 6.1**
M.L. Matias1, A. Pimentel1, F. X. Vasconcelos1, A. Machado2, J. Rodrigues3, E. Fortunato1, R. Martins1*, D. Nunes1*
1. CENIMATIi3N, Department of Materials Science, School of Science and Technology, NOVA University Lisbon and CEMOP/UNINOVA, Caparica, Portugal 2. LAQV-REQUIMTE, Department of Chemistry (DQ), NOVA School of Science and Technology, Universidade NOVA de Lisboa, Campus de Caparica, 2829-516 Caparica, Portugal. 3. Physics Department & I3N, Aveiro University, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal

**11:00** **Photocatalytic properties of doped TiO2 nanowires** **N 6.2**
Federico Giuffrida 12, Lucia Calcagno 1, Giuliana Impellizzeri 2, Antonio Alessio Leonardi 12 and Massimo Zimbone 2
1 Dipartimento di Fisica e Astronomia, University of Catania, Via S. Sofia, 64, 95124, Catania, Italy, 2 CNR-IMM Catania University, Via S. Sofia, 64, 95124, Catania, Italy

**11:15** **Enlightening the Bimetallic Effect of Au@Pd Nanoparticles on Ni Oxide nanostructured films with Enhanced Catalytic Activity** **N 6.3**
Bruno, L.*(1,2), Scuderi, M.(3), Priolo, F.(1,2), Falciola, L. (4) & Mirabella, S.(1,2)
(1) Dipartimento di Fisica e Astronomia "Ettore Majorana", Università di Catania, via S. Sofia 64, 95123 Catania, Italy, (2) CNR-IMM, via S. Sofia 64, 95123 Catania, Italy, (3) CNR-IMM, VIII strada 5, 95121 Catania, Italy, (4) Dipartimento di Chimica, Università degli Studi di Milano, Via Golgi 19, 20133 Milano, Italy.

**11:30** **X-ray nanobeam effects on TiO2 and SrTiO3 at 17.5 keV** **N 6.4**
Andrea Alessio* (1), Valentina Bonino (2), Thomas Heisig (3)(4), Federico Picollo (1), Daniele Torsello (5)(6), Lorenzo Mino (7), Gema Martinez-Criado (2)(8), Regina Dittman (3)(4), Marco Truccato (1)
(1) Department of Physics, Interdepartmental Centre NIS, University of Torino, Italy, (2) European Synchrotron Radiation Facility – Experiments Division, Grenoble, France, (3) Forschungszentrum Juelich GmbH, Peter Gruenberg Institute 7, D-52425 Juelich, Germany, (4) JARA-FIT, RWTH Aachen University, D-52056 Aachen, Germany, (5) Department of Applied Science and Technology, Politecnico di Torino,10129 Turin, Italy, (6) Istituto Nazionale di Fisica Nucleare, Sezione di Torino, 10125 Turin, Italy, (7) Department of Chemistry, Interdepartmental Centre NIS and INSTM, University of Torino, Italy, (8) Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, 28049 Cantoblanco, Spain

**11:45** **Development of Nanolaminates for Carrier Selectivity** **N 6.5**
X. L. Pinheiro* (1,2), J. P. Teixeira (1), R. C. Vilão (2), A. J. N. Oliveira (1,3,4), K. Oliveira (1), M. A. Curado (1,2), M. Monteiro (1), T. S. Lopes (1,5,6,7), C. Matos (1,8), J. Lisboa (1,8), R. D. Pinto (1,8), P. A. Fernandes (1,4,9) & P. M. P. Salomé (1,3)
(1) INL – International Iberian Nanotechnology Laboratory, Avenida Mestre José Veiga, 4715-330 Braga, Portugal (2) University of Coimbra, CFisUC, Department of Physics, R. Larga, P-3004-516 Coimbra, Portugal (3) Departamento de Física, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal (4) i3N, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal (5) Institute for Material Research (IMO), Hasselt University (partner in Solliance), Agoralaangebouw H, Diepenbeek, 3590, Belgium (6) Imec division IMOMEC (partner in Solliance), Wetenschapspark 1, 3590 Diepenbeek, Belgium (7) EnergyVille, ThorPark, Poort Genk, 8310 & 8320, 3600 Genk, Belgium (8) Departamento de Ciências dos Materiais, Nova School of Science and Technology, Universidade NOVA de Lisboa, 2829-516 Caparica, Portugal (9) CIETI, Departamento de Física, Instituto Superior de Engenharia do Porto, Instituto Politécnico do Porto, 4200- 072, Porto Portugal

**12:00** **Electrophoretic Deposition of Metal (Ti, Hf) Oxide Nanocrystals: Towards Particle-based Functional Thick Films** **N 6.6**
Yannick Dähler, Alessandro Lauria
Laboratory for Multifunctional Materials, Department of Materials, ETH Zurich, Vladimir-Prelog-Weg 5, 8093 Zurich, Switzerland

**12:15** **Discussion**

**12:30** **Lunch and Plenary**

**I : S. Mao, T. Yamamaoto**

**16:00** **α-phase gallium oxide thin films stabilized on a- and m-plane sapphire substrates via reactive magnetron sputtering and PLD** **N 7.1**
Edgars Butanovs, Martins Zubkins, Juris Purans
Institute of Solid State Physics, University of Latvia, Kengaraga street 8, Riga, Latvia, LV-1063

**16:00** **Hydrogen sensing effects of Cu:ZnO thin film deposited by sputtering with substrate heating** **N 7.2**
Yu-Zhan Weng1, Chun-Min Hsu1, Zhao-Hong Yang1,2, Tien-Chai Lin1, Wen-Chang Huang1,2,*
1Department of Electrical Engineering, Kun Shan University, No. 195, Kun-Da Rd., Yung-Kang Dist., Tainan, 71003, Taiwan, ROC 2Green Energy Technology Research Center, Kun Shan University, No. 195, Kun-Da Rd., Yung-Kang Dist., Tainan, 71003, Taiwan, ROC

**16:00** **Elaboration of ZnMgO thin films by ultrasonic spray pyrolysis for optoelectronic applications using water-based solutions** **N 7.3**
Sourav Bose, Christyves Chevallier, Sidi Ould Saad Hamady, Nicolas Fressengeas
Université de Lorraine, CentraleSupélec, LMOPS, F-57000 Metz, France

**16:00** **Effect of DNA Aptamer Concentration on Conductivity of Water-gated Al:ZnO Thin Film Transistor** **N 7.4**
Andrejs Ogurcovs [1], Kevon Kadiwala [1], Eriks Sledevskis [2], Marina Krasovska [2], Ilona Plaksenkova [3]
[1] Institute of Solid State Physics, University of Latvia, Kengaraga street 8, Riga, Latvia, LV-1063 [2] G. Liberts' Innovative Microscopy Centre, Department of Technology, Institute of Life Sciences and Technology, Daugavpils University, Parades Street 1, Daugavpils LV-5401, Latvia [3] Laboratory of Genomics and Biotechnology, Department of Biotechnology, Institute of Life Sciences and Technology, Daugavpils University, Parades Street 1A, Daugavpils, LV-5401, Latvia



**16:00** **Developing tailorable oxide thin films by pulsed laser depositions** **N 7.5**
Stefan Andrei Irimiciuc(1), Gabriela Dorcioman(1), Petronela Garoi(1), Jan Lancok(2), Sergii Chertopalov(2), Valentin Craciun(1,3)
1National Institute for Laser, Plasma and Radiation Physics – NILPRP, 409 Atomistilor Street, Bucharest, Romania 2Institute of Physics of the Czech Academy of Sciences, Na Slovance 1999/2, Prague, Czech Republic 3Extreme Light Infrastructure for Nuclear Physics, IFIN-HH, Magurele, Romania

**16:00** **Dependence of HfO2/IZO heterojunction band offsets on IZO composition** **N 7.6**
Gabriela Dorcioman1, Doina Craciun1, Radu Udrea2,3, Valentin Craciun1, 4
1National Institute for Laser, Plasma and Radiation Physic, Laser Department, 409 Atomistilor St., PO Box Magurele, Romania,2Apel Laser, Romania,3Facultatea de Fizica, Universitatea din Bucuresti, Romania, Extreme Light Infrastructure for Nuclear Physics, ELI-NP, IFIN-HH, Magurele, Romania

**16:00** **Effect of implantation of Ba+ ions on the composition of the W(111) and WO2 surfaces** **N 7.7**
B.E. Umirzakov, D.A. Tashmukhamedova, Z.A. Isakhanov, F.Y. Khudayqulov
Tashkent State Technical University

**16:00** **Temperature dependance of polarisation and conduction mechanisms in ferroelectric Hf0.5Zr0.5O2 thin film** **N 7.8**
Benoît Manchon123, Dorian Coffineau23, Greta Segantini1, Nicolas Baboux1, Pedro Rojo Romeo1, Rabei Barhoumi1, Ingrid C. Infante1, Yann Beilliard23, Fabien Alibart4, Dominique Drouin23, Damien Deleruyelle1, Bertrand Vilquin1
1 Univ. Lyon, Ecole centrale de Lyon, INSA Lyon, CNRS, UCBL, CPE Lyon, Institut des nanotechnologies de Lyon, UMR5270, 69130 Ecully, France 2 Institut Interdisciplinaire d'Innovation Technologique (3IT), Université de Sherbrooke, Sherbrooke, Québec,Canada 3 Laboratoire Nanotechnologies Nanosystèmes (LN2) CNRS UMI3463, Sherbrooke, Canada 4 Institute of Electronics, Microelectronics and Nanotechnology (IEMN), Université de Lille, Villeneuve d'Ascq, France

**16:00** **n-Ga2O3/p-GaSe heterojunctions: preparation technology vs. optical and photoelectrical properties** **N 7.9**
Vatavu, E.(1), Dmitroglo, L.(1,2), Sprincean, V.(1,3), Spoială, D.(2), Leca, L.(2), Caraman, M.(2,3), Vatavu, S.*(2,4)
(1) Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (2) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (3) Environmental Physics and Modeling Complex Systems Research Lab, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (4) CaRISMA Research Center, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova

**16:00** **Optical and electrical properties of hydrogen doped indium oxide thin films** **N 7.10**
D. Dobrin, F. Gherendi, M. Magureanu and M. Nistor
National Institute for Lasers, Plasma and Radiation Physics (NILPRP), L22, PO Box. MG-36, 077125 Bucharest-Magurele, Romania

**16:00** **Metalorganic aerosol deposition of Ga2O3 thin films** **N 7.11**
Belenchuk, A.(1), Shapoval, O.(1), Boris, Iu.(1,2), Palamarciuc, O.(1), Vatavu, E.(2), Dmitroglo, L.(1), Vatavu, S.*(1,3)
1) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (2) E. Pokatilov Laboratory of Physics and Engineering of Nanomaterials, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (3) CaRISMA Research Center, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova

**16:00** **The effect of oxygen deficiency on zinc oxide thin films grown by pulsed electron beam deposition** **N 7.12**
M. Nistor 1, F. Gherendi 1 and J. Perrière 2,3
1 National Institute for Lasers, Plasma and Radiation Physics (NILPRP), L22, PO Box. MG-36, 077125 Bucharest-Magurele, Romania 2 Sorbonne Universités, UPMC Univ Paris 06, UMR 7588, INSP, F-75005, Paris, France, 3 CNRS, UMR 7588, INSP, F-75005, Paris, France

**16:00** **Development of Cathode Active Materials using CrIII-containing Vanadate Glass for Li-ion Battery** **N 7.13**
Saeko Matsuo (1), Shunsuke Matsusako (1), Yuma Morimoto (1), Ayaka Fukuchi (1), Hyuga Nakahara (1), Masakazu Haruta (1), Tetsuaki Nishida (2), Nobuto Oka (1)
(1) Kindai University, Japan, (2) Environmental Materials Institute, Japan

**16:00** **Experimental setup for Laser Induced Damage Threshold measurements of optical films** **N 7.14**

G. P. Bleotu1,2,3, A. Naziru1,2, D. G. Matei1, S. Popa1, A. Dumitru1, C. Alexe1, V. Craciun4, R. Udrea2,4, S. A. Irimiciuc4, D. Craciun4, G. Dorcioman4, O. Uteza5, V. Craciun1,4, D. Ursescu1,2
1 &#8220,Horia Hulubei&#8221, National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), ELI-NP, 077125 Bucharest-Magurele, Romania, 2 University of Bucharest, Faculty of Physics, 077125 Bucharest-Magurele, Romania, 3 LULI-CNRS, CEA, UPMC Univ Paris 06: Sorbonne Universite, Ecole Polytechnique, Institut Polytechnique de Paris, F-91128 Palaiseau, France , 4 National Institute for Laser, Plasma and Radiation Physics, 077125 Bucharest-Magurele, Romania. 5 LP3 Laboratory, University of Marseille, France



**Wednesday june 1**

## Advanced oxide thin films I : Tanaka Hidekazu

**09:00** INV **Circulating Manufacturing and Advanced Oxide Thin Films using Photo Reaction Process for Next Generation** **N 8.1**

Tetsuo Tsuchiya, T. Nakajima, I. Yamaguchi, J. Monoto, Y. Kitanaka, Y. Uzawa
Advanced Manufacturing Research Institute, National Institute of Advanced Industrial Science and Technology (AIST)

**09:30** **Peculiar Magnetic Property of Superlattices and Multilayers Using both of Antiferromagnetic LaFeO3 and CaFeO3.** **N 8.2**

Nobuyuki Iwata
College of Science & Technology, Nihon Univ., 7-24-1 Narashinodai, Funabashi-shi, Chiba 274-8501 Japan

**09:45** **Modification of Various Amorphous or Polycrystalline TCO films by the Strong Flash-lamp Irradiation** **N 8.3**

Makoto Kashiwagi*(1),(2), Kentaro Tanaka(1), Simpei Iwasaki(1), Takehiko Yokomori(3), Yuki Oguchi(4), Takuya Komoda(5), *Yuzo Shigesato(1)
(1) Graduate School of Science and Engineering, Aoyama Gakuin University, JAPAN, (2) PRESTO, Japan Science and Technology Agency, JAPAN, (3) Business Management Head Quarters, Ushio Inc., JAPAN, (4) Center for Instrumental Analysis, Aoyama Gakuin University, JAPAN, (5) Research Organization for Center of Innovation, Yamagata University, JAPAN

**10:00** **Semiconductor to metal transition in ZnO-based thin films and their nanocomposites: Effect of energetic ions** **N 8.4**

Himanshi Gupta*1, Subodh K Gautam1,2, RG Singh3, Jitendra Singh1,4, Monika Tomar5, G. R. Umapathy1, S. Ojha1, Soumen Kar1, Fouran Singh1
1) Inter-University Accelerator Centre, Aruna Asaf Ali Marg, New Delhi - 110067, India. 2)Laboratory of Solid-State Physics (LPS), University of Paris-Sud, 91400 Orsay, France. 3)Department of Physics, Bhagini Nivedita College, University of Delhi, New Delhi -110043, India. 4) Department of Materials Science and Engineering, National Taiwan University of Science and Technology, Taipei 10607, Taiwan. 5)Miranda House College, University of Delhi, New Delhi - 110007, India.

**10:15** **An Experimental Comparison Study on the Cu2O thin films via different preparation techniques** **N 8.5**

Chithira Venugopalan Kartha , Dominique Muller , Stéphane Roques , Gérald Ferblantier , Abdelilah Slaoui , Thomas Fix
Icube Laboratory, Université de Strasbourg and CNRS, 23 rue du Loess, BP 20 CR, F-67037 Cedex 2 Strasbourg, France

**10:30** **Discussion**

## Advanced oxide thin films II : Tetsuo Tsuchiya

**10:45** INV **High ionic conductivity at the infaces of solid electrolytes and electrodes** **N 9.1**

Taro Hitosugi
The University of Tokyo

**11:15** **Substechiometric Molybdenum trioxide as selective contacts for silicon solar cells** **N 9.2**

Salvatore La Manna 1 2, Fiorella Tringali 1 2, Giorgia Franzò 2, Antonio Terrasi 1, Maria Miritello 2
1 University of Catania, Via S. Sofia,64, I-95123 Catania, Italy, 2 CNR-IMM, Via S. Sofia,64, I-95123 Catania, Italy

**11:30** **Ferroelectric properties of epitaxial Pb(Zr, Ti)O3 transferred from SrTiO3(100) single crystal to flexible Cu/polyimide sheet** **N 9.3**

Hiroaki Nishikawa1), Tomofumi Mizuyama2)
1 Faculty of Biology-Oriented Science and Technology, Kindai University 2 Graduate School of Biology-Oriented Science and Technology, Kindai University

**11:45** **Metal Oxide Thin-film Transistors prepared by an Aqueous Blade-coating process** **N 9.4**
Tianyu Tang, Preetam Dacha, Joshua Kreß, Christian Hänisch, Jonathan Perez Andrade, Alexander Tahn, Darius Pohl, Markus Löffler, Felix Talnack, Katherina Haase, Mike Hambsch, Sebastian Reineke, Yana Vaynzof, Stefan C. B. Mannsfeld *
Tianyu Tang, Preetam Dacha, Felix Talnack, Katherina Haase, Mike Hambsch,Stefan C. B. Mannsfeld,-Center for Advancing Electronics Dresden (cfaed) and Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Dresden 01069, Germany Joshua Kreß, Christian Hänisch,Sebastian Reineke, Yana Vaynzof,-Dresden Integrated Center for Applied Physics and Photonic Materials (IAPP) and Institute for Applied Physics, Technische Universität Dresden, Dresden 01069, Germany Jonathan Perez Andrade,-Leibniz Institute for Solid State and Materials Research (IFW), Dresden 01069, Germany Alexander Tahn, Darius Pohl, Markus Löffler, -Dresden Center for Nanoanalysis (DCN), Center for Advancing Electronics Dresden (cfaed), Technische Universität Dresden, Dresden 01069, Germany

**12:00** **Factors limitting carrier transport of W-doped In2O3 films with thicknesses of less than 10 nm** **N 9.5**
Tetsuya Yamamoto, Palani Rajasekaran, Hisao Makino
Research Institute, Kochi University of Technology

**12:15** **Discussion**

**12:30** **Lunch and Plenary**

## High Temperature superconducting thin films : T. Yamamoto

**15:30** **Microstructural tuning of High Current Density YBCO Superconducting Thin Films Grown by Ultrafast Transient Liquid Assisted Grow** **N 10.1**
Kapil Gupta, Lavinia Saltarelli, Roger Guzmán, Albert Queraltó, Laia Soler, Júlia Jareño, Juri Banchewski, Silvia Rasi, Diana Garcia, Valentina Roxana Vlad, A. Kethamkuzhi, J. Gutierrez, Susagna Ricart, Cristian Mocuta, Xavier Obradors, Teresa Puig
Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Synchrotron SOLEIL, L'Orme des Merisiers Saint-Aubin, BP 48, 91192 Gif-sur-Yvette, France, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain, Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Barcelona, Spain

**15:45** **Wideband pyroelectric response of amorphous Y-Ba-Cu-O thin films extending up to 40 MHz** **N 10.2**
Annick Degardin, Antoine Cheneau, Corentin Morin, Martin Clergeau, Alain Kreisler
Paris-Saclay, CentraleSupélec, CNRS, Group of Electrical Engineering, 91190 Gif sur Yvette, France, Sorbonne Université, CNRS, Group of Electrical Engineering, 91190 Gif sur Yvette, France

**16:00** **Discussion**



**Thursday june 2**

## 2D and epitaxial thin films I : Hiroaki NISHIKAWA

**09:00** INV **2D Oxide Nanosheets: Synthesis, Controlled Assembly and Applications** **N 11.1**
Minoru Osada
1 Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University, Japan 2 International Center for Materials Nanoarchitectonics, National Institute for Materials Science (NIMS), Japan

**09:30** **Optical Responses and Hysteresis Characteristics of PEDOT:PSS/ZnO Nanorods/GZO Heterojunction UV Light Detecting Devices** **N 11.2**
1 Tomoaki Terasako, 2 Masakazu Yagi, 3 Tetsuya Yamamoto
1 Graduate School of Science and Engineering, Ehime University, 2 National Institute of Technology (KOSEN), Kagawa College, 3 Research Institute, Kochi University of Technology

**09:45** **Enhanced Verwey Transition in Fe3O4 Ultra-thin Film Grown on Atomically Flat and Ordered MgO substrate** **N 11.3**
A.I. Osaka*(1), D. Toh(2), K. Yamauchi(2), K. Hattori(3), X. Shi(4), F. Guo(4), H. Tanaka(1), A.N. Hattori(1)
(1) SANKEN, Osaka University, Japan (2) Department of Precision Science and Technology, Graduate School of Engineering, Osaka University, Japan (3) Graduate School of Science and Technology, Nara Institute of Science and Technology (NAIST), Japan (4) Institute of Mechanical Engineering, Dalian Jiaotong University, China

**10:00** **A sustainable self-induced solution seeding approach for multipurpose BiFeO3 active layers in flexible electronic devices** **N 11.4**
Barrios, O., Jiménez, R, Ricote, J., Tartaj, P., Calzada, M.L. & Bretos, I.*
Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), C/ Sor Juana Inés de la Cruz 3, Madrid, 28049, Spain.

**10:15** **Effect of bending strain on magnetic anisotropy in epitaxial ferrite thin films on mica** **N 11.5**
Darla Mare (1), Zheng Ma (1, 3), Vassil Skumryev (2, 3), Florencio Sánchez (1), Nico Dix (1), Marti Gich (1)
(1) Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, Bellaterra 08193, Barcelona, Spain (2) Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona 08010, Spain (3) Universitat Autònoma de Barcelona, Departament de Física, Bellaterra 08193, Spain

**10:30** **Discussion**

## 2D and epitaxial thin films II : Osada Minoru

**10:45** **Synthesis of optically active Europium oxyhydroxide 2D-microstars** **N 12.1**
A. Caño(1), F. Chacon(1), B. Galiana(2), G.B. Perea(2), A. de Andrés(3), A. Mariscal-Jiménez(4), J. Gonzalo(1), R. Serna(1).
(1) Laser Processing Group, Instituto de Optica, IO, CSIC, Serrano 121, 28006 Madrid, Spain, (2) Dept. of Physics, Escuela Politécnica Superior, Universidad Carlos III, 28911 Leganés, Madrid, Spain, (3) Instituto de Ciencia de Materiales de Madrid, ICMM, CSIC, Cantoblanco, 28049 Madrid, Spain, (4) Dept. of Information Technologies, Escuela Politécnica Superior, Universidad CEU-San Pablo, Campus Montepríncipe, Boadilla del Monte, Madrid 28668, Spain

**11:00** **Atomic Layer Desposition of Alumina to Enhance the Stability of Silicon-Based Nanocomposite Micro-supercapacitor Electrodes** **N 12.2**
Authors Marc Dietrich 1-2, Anthony Valero 1-2, Nicolas Pauc 1, Pascal Gentile 1, Saïd Sadki 2.
1 : Univ. Grenoble Alpes, CEA IRIG-DEPHY- PHELIQS, 38054 Grenoble 2 : Univ. Grenoble Alpes, CEA IRIG-DIESE-SYMMES, 38054 Grenoble

**11:15** **SnO2 thin films for TFT and sensor applications: Unearthing a versatile Sn(IV) precursor in PEALD and MOCVD for fine-tuned film** **N 12.3**
David Zanders, Claudia Bock, Klaus Schierbaum, Anjana Devi
Inorganic Materials Chemistry, Ruhr University Bochum, Universitätsstraße 150, Bochum, Germany 44780, Faculty of Electrical Engineering and Information Technology, Ruhr University Bochum, Universitätsstraße 150, Bochum, Germany 44780, Institute of Experimental Condensed Matter Physics, Department of Materials Science, Heinrich-Heine University Duesseldorf, 40225 Duesseldorf, Germany, Inorganic Materials Chemistry, Ruhr University Bochum, Universitätsstraße 150, Bochum, Germany 44780,

**11:30** **Growth of the Correlated Metal SrVO3 by Molecular Beam Epitaxy** **N 12.5**
Lishai Shoham1, Maria Baskin1, Myung-Geun Han2, Yimei Zhu2, and Lior Kornblum1
1 Andrew and Erna Viterbi Department of Electrical and Computer Engineering, Technion—Israel Institute of Technology, 2 Condensed Matter Physics and Materials Science, Brookhaven National Laboratory,

**11:45** **Giant thermoelectric tuning by epitaxial strain of p-type Sr-doped LaCrO3 transparent thin films** **N 12.6**
D. Han1, R. Moalla1, I. Fina2, V.M. Giordano3, M. d'Esperonnat1, C. Botella1, G. Grenet1, R. Debord3, S. Pailhès3, G. Saint-Girons1, and R. Bachelet1,*
1. INL - Institut des Nanotechnologies de Lyon, Univ. Lyon, Ecole Centrale de Lyon, CNRS, UMR5270, 69134 Ecully, France (* romain.bachelet@ec-lyon.fr) 2. ICMAB - Institut de Ciencia de Materials de Barcelona, CSIC, Barcelona 08193, Spain 3. ILM - Institut Lumière Matière, Université de Lyon, UCBL, CNRS, UMR 5306, 69622 Villeurbanne, France

**12:00** **Lunch and Plenary**

## Transparent and conductive oxide films I : A Klein

**13:45** INV **Transparent and conductive indium-free Vanadates crystallized at reduced temperature on glass using a 2D nanosheet seed layer** **N 13.1**
A. Boileau(1), S. Hurand(2), F. Baudouin(3), U. Lüders(1), M. Dallocchio(1), B. Bérini(4), A. Cheikh(1), A. David(1), C. Labbé(5), J. Cardin(5), M. Guilloux-Viry(3), W. Prellier(1), Y. Dumont(4), V. Demange(3), A. Fouchet(1)*
(1) NORMANDIE UNIV., ENSICAEN, UNICAEN, CNRS, CRISMAT, 14000 CAEN, France (2) Institut Pprime, UPR 3346 CNRS-Université de Poitiers-ENSMA, SP2MI, 86962 Futuroscope-Chasseneuil cedex, France (3) Université de Rennes, CNRS, ISCR – UMR 6226, ScanMAT – UMS 2001, Rennes F-35000, France (4) Groupe D'Etude de La Matière Condensée (GEMaC), Université Paris-Saclay, UVSQ, CNRS, 45 Av. des Etats-Unis, 78035, Versailles Cedex, France (5) CIMAP, Normandie Université, ENSICAEN, UNICAEN, CNRS UMR6252, CEA, 14000 Caen, France

**14:15** **Conduction analysis of IGZO memristor for flexible analog memristor-based neural networks** **N 13.2**
Guilherme Carvalho1, Asal Kiazadeh2, Maria Pereira2, Jonas Deuermeier2, Rodrigo Martins2 Elvira Fortunato2 and Vítor Tavares1
1. Institute for Systems and Computer Engineering, Technology and Science (INESC TEC)-INESC Technology and Science and FEUP - Faculdade de Engenharia, Universidade do Porto, Campus da FEUP, Porto, Portugal 2. CENIMATIi3N, Department of Materials Science, School of Science and Technology, NOVA University Lisbon and CEMOP/UNINOVA, Caparica, Portugal guilherm3.c@gmail.com - a.kiazadeh@fct.unl.pt

**14:30** **Towards p-type MBE-grown SrTi1-xAlxO3 films for thermoelectric applications** **N 13.3**
M. d'Esperonnat1, C. Adessi2, C. Botella1, A. Lamirand1, B. Canut3, G. Saint-Girons1, R. Bachelet1
1 Institut des Nanotechnologies de Lyon, INL UMR5270 CNRS, Ecole Centrale de Lyon, 69134 Ecully, France, 2 Institut Lumière Matière, ILM UMR5306 CNRS, Univ. Lyon 1, 69622 Villeurbanne, France, 3 Institut des Nanotechnologies de Lyon, INL UMR5270 CNRS, INSA Lyon, 69621 Villeurbanne, France,

**14:45** **High–quality deposition of vanadium dioxide (VO2) films using magnetron sputtering** **N 13.4**
Eduard-Nicolae Sirjita12, Alexandre Boulle2, Richard Mayet2, Jean-Christophe Orlianges1, Aurelian Crunteanu1
1. XLIM, UMR 7252 CNRS/Université de Limoges, 123 Av. Albert Thomas, 87060 Limoges, France, 2. Institut de Recherche sur les Céramiques (IRCer), CNRS UMR 7315, Université de Limoges, Centre Européen de la Céramique, 12 rue Atlantis, Limoges, 87068, France

**15:00** **Mg-doped ZnO detectors for fast ultraviolet detection** **N 13.5**
Ščajev, P. *(1), Miasojedovas, A. (1), Mekys, A. (1), Mazuronyte, M. (1), Chang, L. (2), Chou M. M. C. (2)
(1) Institute of Photonics and Nanotechnology, Vilnius University, Saulėtekio Ave. 3, LT 10257 Vilnius, Lithuania (2) Department of Materials and Optoelectronic Science, National Sun Yat-sen University, Kaohsiung 80424, Taiwan

**15:15** **Thin oxide films coating metallic nanowire networks: a promising nanocomposite for many applications** **N 13.6**
Daniel Bellet, Abdou Sekkat, Masoud Akbari, Chiara Crivello, Dorina T. Papanastasiou1 Laetitia Bardet, Ambreen Ambreen, Camilo Sanchez, Matthieu Weber, Carmen Jiménez, David Muñoz-Rojas
Univ. Grenoble Alpes, CNRS, Grenoble INP, LMGP, 38000 Grenoble, France



**15:30** **Sustainable electronic logic circuits with fully printed paper transistors** **N 13.7**
Inês Cunha1, Ana Rovisco1, Sofia Henriques Ferreira1, Jorge Martins1, Pydi Ganga Bahubalindruni2, José Tiago Carvalho1, Pedro Barquinha1, Elvira Fortunato1, Rodrigo Martins1 and Luís Pereira1,3
1 - CENIMATIi3N, Department of Materials Science, School of Science and Technology, NOVA University Lisbon and CEMOP/UNINOVA, Caparica, Portugal
2 - Indian Institute of Technology Goa, At Goa College of Engineering Campus, Farmagudi, Ponda-403401, Goa, India 3 - AlmaScience, Campus da Caparica, 2829-516 Caparica (Portugal)

**15:45** **Discussion**

## II : S. Mao, T. Yamamaoto, V. Craciun

**16:00** **Stabilization of the oxygen concentration in La0.3Sr0.7CoO3–δ thin films by LaAlO3 capping layer** **N 14.1**
M. Kiaba, O. Caha, F. Abadizaman, A. Dubroka
Department of Condensed Matter Physics, Faculty of Science, Masaryk University,
Department of Condensed Matter Physics, Faculty of Science, Masaryk University,
Department of Condensed Matter Physics, Faculty of Science, Masaryk University,
Department of Condensed Matter Physics, Faculty of Science, Masaryk University

**16:00** **Gold-decorated manganese oxide-based electrocatalysts for the oxygen evolution reaction by a plasma-assisted route** **N 14.2**
Davide Barreca,a,* Chiara Maccato,a,b Alberto Gasparotto,a,b Lorenzo Bigiani,b Teresa Andreu,c,d Johan Verbeeck,e Cinzia Sada,f Evgeny Modin,g Oleg I. Lebedev,h Juan Ramón Morante.c,d
a. CNR-ICMATE and INSTM, Department of Chemical Sciences, Padova University, 35131 Padova, Italy b. Department of Chemical Sciences, Padova University and INSTM, 35131 Padova, Italy c. Catalonia Institute for Energy Research - IREC, Sant Adrià de Besòs, 08930 Barcelona, Spain d. Universitat de Barcelona (UB), 08028 Barcelona, Spain e. EMAT and NANOlab Center of Excellence, University of Antwerp, 2020 Antwerpen, Belgium f. Department of Physics and Astronomy, Padova University and INSTM, 35131 Padova, Italy g. CIC nanoGUNE BRTA, 20018 Donostia - San Sebastian, Spain h. Laboratoire CRISMAT, UMR 6508 CNRS/ENSICAEN/UCBN, 14050 Caen Cedex 4, France

**16:00** **Chemical vapor deposition of nanoscale α-Mn3O4 electrode materials for water splitting applications** **N 14.3**
Alberto Gasparotto,*,a,b Chiara Maccato,*,a,b Cinzia Sada,c Athanasia Petala,d Symeon Bebelis,d Dimitris I. Kondarides,d Davide Barreca.b
a Department of Chemical Sciences, Padova University and INSTM, 35131 Padova, Italy, b CNR-ICMATE and INSTM, Department of Chemical Sciences, Padova University, 35131 Padova, Italy, c Department of Physics and Astronomy, Padova University and INSTM, 35131 Padova, Italy, d Department of Chemical Engineering, University of Patras, 26504 Patras, Greece.

**16:00** **Electric field-induced domain wall motion in spin spiral systems** **N 14.4**
Francesco Foggetti, Sergey Artyukhin
Italian Institute of Technology, Italian Institute of Technology

**16:00** **Strain-induced metal-to-insulator transition in SrCrO3 thin films** **N 14.5**
Simon Jöhr, Alberto Carta, Jonathan Spring, Anna Zakharova, Cinthia Piamonteze, Claude Ederer, Marta Gibert
University of Zurich, Zurich, Switzerland, ETHZ, Zurich, Switzerland, University of Zurich, Zurich, Switzerland, Paul Scherrer Institute, Villigen, Switzerland, Paul Scherrer Institute, Villigen, Switzerland, ETHZ, Zurich, Switzerland, Technische Universität Wien, Wien, Austria,

**16:00** **FeV2O4 epitaxial thin films on MgO: properties and orbital ordering** **N 14.6**
Antonio Peña Corredor (a), Daniele Preziosi (a), Laurianne Wendling (a), François Roulland (a), Laurent Schlur (a), Nils Blanc (b), Stephane Grenier (c), Nathalie Viart (a), Christophe Lefevre (a)
(a) - Institut de Physique et Chimie des Matériaux de Strasbourg. Strasbourg, France. (b) - European Synchrotron Radiation Facility. Grénoble, France. (c) - Institut Néel. Grénoble, France.

**16:00** **Local conductivity of SrVO3 perovskite thin film deposited on oxide nanosheets** **N 14.7**
R. Coq Germanicus1*, A. Boileau1, F. Baudouin2, V. Demange2, A. David1, M. Febvre3, U. Lüders1, W. Prellier1 and A. Fouchet1
1. NORMANDIE UNIV, ENSICAEN, UNICAEN, CNRS, CRISMAT, 14000 CAEN, France. 2. Univ Rennes, CNRS, ISCR – UMR 6226, 35042 Rennes, France. 3. Bruker Nano Surfaces, 112 Robin Hill Road,CA 93117, Santa Barbara, USA.

**16:00** **An eco-friendly flexible system for piezoelectric application** **N 14.8**
M. Nasui1*, R. B. Sonher 1, T. Petrisor Jr.1, E. Ware2, M.S. Gabor, L. Ciontea 1, T. Petrisor1
1Centre for Superconductivity, Spintronics and Surface Science, Technical University of Cluj-Napoca, Str. Memorandumului, Nr. 28, 400114 Cluj-Napoca, Romania 2 Imperial College London, Exhibition Road, South Kensington, London SW 7 2AZ, United Kingdom

**16:00** **Piezoelectric study of doped BCTZ thin films for ceramic transducer applications** **N 14.9**
Nazir Jaber, Jerome Wolfman, Fabien Giovannelli, Claire Bantignies, Bogdan Rosinski, Jean-Louis Longuet, Pascal Andreazza, Beatrice Negulescu
N. Jaber1, J. Wolfman1, F. Giovannelli1, C. Bantignies2, B. Rosinski2, J-L. Longuet3, P. Andreazza4, B. Negulescu1 1 GREMAN, UMR7347 CNRS, Université de Tours, Parc de Grandmont, 37200 Tours, France 2 VERMON SA, 180 rue du Général Renault, 37038 Tours, France 3 CEA, DAM, Le Ripault, F-37260 Monts, France 4 ICMN, UMR 7374 CNRS, Université d'Orléans,1b rue de la Férollerie, 45071 Orléans, France

**16:00** **Interference of oxide nanoparticles with microbiota isolated Enterococcus sp strains** **N 14.10**
Holban, A.M.*(1,2), Grumezescu, A.M.(2,3), Capraru, P. (1), Asaftei, M.(1), Ditu, L.M.(1,2), Curutiu, C.(1,2), Puscas, N. (1), Lazar, V.(1)
(1)Department of Microbiology and Immunology, Faculty of Biology, University of Bucharest (2)Research Institute of the University of Bucharest, Romania (3) Department of Science and Engineering of Oxide Materials and Nanomaterials, Faculty of Applied Chemistry and Materials Science, University Politehnica of Bucharest

**16:00** **Synthesis of single crystal metal oxide nanoparticles by using microwaves vaporization of metal wires** **N 14.11**
Doina Craciun1, Petronela Garoi1, Marian Mogildea2, George Mogildea2, Bogdan S. Vasile3, Valentin Craciun1, 4
1National Institute for Laser, Plasma and Radiation Physic, Laser Department, 409 Atomistilor St., PO Box Magurele, Romania,2Institute for Space Science, 077125, Magurele, Romania, 3University «POLITEHNICA» from Bucharest, Faculty of Applied Chemistry and Material Science, Department of Science and Engineering of Oxide Materials and Nanomaterials, Bucharest, Romania, 4Extreme Light Infrastructure for Nuclear Physics, ELI-NP, IFIN-HH, Magurele, Romania

**16:00** **Preparation of ZnO based structures by hydrothermal method for detector and highpower electronics applications** **N 14.12**
Raevschi, S. (1), Gorceac, L. (1), Botnariuc, V.(1), Chetruș, P.I.(1), Gaugas, P.(1), Chetrus, P.M.(1), Vatavu, S.*(1)
(1) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova

**16:00** **Nb-doped TiO2 anatase as a metallic buffer for lattice-mismatched complex oxide heterostructures** **N 14.13**
Belenchuk, A.(1,2), Shapoval, O.(1,2), Dehning, A.(3), Flathmann, C.(4), Vatavu, S.*(1), Moshnyga, V.(2), M. Seibt(4) and Jooss, C.(3)
(1) Physics of Semiconductors and Devices Lab, Faculty of Physics and Engineering, Moldova State University, 60 A. Mateevici str., MD 2009, Chisinau, Moldova, (2) Erstes Physikalisches Institut, Georg-August-Universität Göttingen, Friedrich-Hund Platz 1, 37077 Göttingen, Germany, (3) Institut für Materialphysik, Georg-August-Universität Göttingen, Friedrich-Hund Platz 1, 37077 Göttingen, Germany, (4) Viertes Physikalisches Institut, Georg-August-Universität Göttingen, Friedrich-Hund Platz 1, 37077 Göttingen, Germany

**16:00** **Development of Air-Electrode Catalyst using CoII,III-containing Vanadate Glass for Rechargeable Metal-Air Battery** **N 14.14**
Saeko Matsuo (1), Takahisa Sakuragi (1), Hyuga Nakahara (1), Ayaka Fukuchi (1), Yuma Morimoto (1), Masayoshi Yuasa (1), Tetsuaki Nishida (2), Nobuto Oka (1)
(1) Kindai University, Japan, (2) Environmental Materials Institute, Japan



**Friday june 3**

## Transparent and conductive oxide films II : FOUCHET Arnaud

**09:00** INV **Solution-based Metal Oxides: A Demand to Scale-up Electronic Devices from Lab to Fab** **N 15.1**
Emanuel Carlos1, Rita Branquinho1, Asal Kiazadeh1, Jonas Deuermeier1, Rodrigo Martins1 and Elvira Fortunato1
1. i3N/CENIMAT, Department of Materials Science, Faculty of Sciences and Technology, Universidade NOVA de Lisboa and CEMOP/UNINOVA, Campus de Caparica, 2829-516 Caparica, Portugal

**09:30** **Growth and Characterizations of Zinc Tin Oxynitride Thin Films** **N 15.2**
Naoomi Yamada,1) Kenta Mtsuura,1) Mari Mizutani,1) Shunichiro Yata,1) Masataka Imura,2) Hidenobu Murata,3) Junjun Jia,4) Fumio Kawamura5)
1) Department of Chemistry, Chubu University, 2) Next-Generation Semiconductor Group, National Institute for Materials Science (NIMS), 3) Department of Materials Science, Osaka Prefecture University, Global Center for Science and Engineering, Waseda University, High Pressure group, National Institute for Materials Science (NIMS)

**09:45** **High-mobility In2O3-based transparent conducting films fabricated by solid-phase crystallization** **N 15.3**
Takashi Koida, Junichi Nomoto
Research Institute for Energy Conservation, National Institute of Advanced Industrial Science and Technology (AIST), 1-1-1, Umezono, Tsukuba, 305-8568, Japan, Advanced Manufacturing Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), 1-1-1, Higashi, Tsukuba, Ibaraki 305-8565, Japan

**10:00** **Oxidation process investigations during pulsed laser deposition of TCO semiconductors** **N 15.4**
Stefan Andrei Irimiciuc(1,2), Sergii Chertopalov(2), Michal Novotný(2), Valentin Craciun(1,3), Jan Lancok(2)
1National Institute for Laser, Plasma and Radiation Physics – NILPRP, 409 Atomistilor Street, Bucharest, Romania 2Institute of Physics of the Czech Academy of Sciences, Na Slovance 1999/2, Prague, Czech Republic 3Extreme Light Infrastructure for Nuclear Physics, IFIN-HH, Magurele, Romania

**10:15** **Observation of room-temperature cavity-polaritons in ZnO microcavities fabricated by a top-down process** **N 15.5**
Kohei Shima, Kentaro Furusawa, and Shigefusa F. Chichibu
Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai 980-8577, Japan

**10:30** **Discussion**

## Ferroelectric thin films III : FOUCHET Arnaud

**10:45** INV **Homogeneous versus non-homogeneous switching in ferroelectrics: can charge injection trigger the switching?** **N 16.1**
L. Pintilie
National Institute of Materials Physics

**11:15** **Magnetic phase and magneto-resistive effects in vanadium oxide epitaxial nanoclusters** **N 16.2**
Brice Kengni Zanguim*, Loïc Joly*, Fabrice Scheurer*^, Philippe Ohresser^, Jean-François Dayen*, Corinne Ulhaq-Bouillet*, Joseph Uzan*, Bohdan Kundys*, Hicham Majjad*, and David Halley*
* Université de Strasbourg, CNRS, Institut de Physique et Chimie des Matériaux de Strasbourg, UMR 7504, F-67000 Strasbourg, France ^ Synchrotron SOLEIL, L'Orme des Merisiers, Saint-Aubin, BP 48, F-91192 Gif-sur-Yvette, France

**11:30** **Steep-slope Negative Capacitance Field Effect Transistors with Solution Combustion-Derived Hf0.5Zr0.5O2 ferroelectrics** **N 16.3**
Pavan Pujar *(1), Haewon Cho (1), Sunkook Kim (1)
(1) Multifunctional Nano Bio Electronics Lab, School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Gyeonggi-do 16419, South Korea.

**11:45** **Ferroelectric Phase Formation in Hf0.5Zr0.5O2 using Dual-step PLD Growth for Negative Capacitance Field-Effect Transistors** **N 16.4**
Haewon Cho*(1), Pavan Pujar(1), Sunkook Kim(1)
(1) Multifunctional Nano Bio Electronics Lab, School of Advanced Materials Science and Engineering, Sungkyunkwan University, Gyeonggi-do, Suwon 16419, South Korea.

**12:00** **Low power magnetization manipulation for spintronics : spin Hall magnetoresistance in multiferroic oxide-based heterostructures** **N 16.5**

Suvidyakumar Homkar, Elodie Martin, Benjamin Meunier, Alberto Anadon-Barcelona, Corinne Bouillet, Jon Gorchon, Karine Dumesnil, Christophe Lefèvre, François Roulland, Olivier Copie, Daniele Preziosi, Sébastien Petit-Watelot, Juan-Carlos Rojas-Sánchez, and Nathalie Viart
Université de Strasbourg, CNRS, IPCMS, UMR 7504, F-67000 Strasbourg, France ,
Université de Lorraine, CNRS, IJL, F-54000 Nancy, France

**12:15** **Discussion and Closing**

# SYMPOSIUM O

## Nano-engineered coatings and thin films: from design to applications

*Symposium Organizers :*

Jean-François PIERSON, Institut Jean Lamour – University of Lorraine

Jiri HOUSKA, University of West Bohemia

Nikolaos KALFAGIANNIS, Nottingham Trent University

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## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### Hard coatings and coatings based on metallic glasses : Jean-François PIERSON

**09:00** INV **Cross-sectional characterization and design of nanocrystalline thin films** **O 1.1**
J. Keckes, J. Todt, M. Meindlhumer, R. Daniel, M. Burghammer, C. Mitterer
Montanuniversität Leoben, European Synchrotron Radiation Facility

**09:30** **Small Scale Tribological Behaviour of TiN Film During Running-in Period with Controlled Environment** **O 1.2**
Aslihan SAYILAN(1),(2), José FERREIRA(1), Christophe GOUDIN(1), David PHILIPPON(2), Nicolas MARY(1), Sylvie DESCARTES(2), Philippe STEYER(1)
Aslihan SAYILAN: (1)Univ. Lyon, INSA-Lyon, CNRS UMR 5510, MATEIS, F-69621 Villeurbanne, France, (2)Univ. Lyon, INSA-Lyon, CNRS UMR5259, LaMCoS, F-69621 Villeurbanne, France, José FERREIRA: (1)Univ. Lyon, INSA-Lyon, CNRS UMR 5510, MATEIS, F-69621 Villeurbanne, France, Christophe GOUDIN: (1) Univ. Lyon, INSA-Lyon, CNRS UMR 5510, MATEIS, F-69621 Villeurbanne, France, David PHILIPPON: (2)Univ. Lyon, INSA-Lyon, CNRS UMR5259, LaMCoS, F-69621 Villeurbanne, France, Nicolas MARY: (1)Univ. Lyon, INSA-Lyon, CNRS UMR 5510, MATEIS, F-69621 Villeurbanne, France, Sylvie DESCARTES: (2)Univ. Lyon, INSA-Lyon, CNRS UMR5259, LaMCoS, F-69621 Villeurbanne, France, Philippe STEYER: (1)Univ. Lyon, INSA-Lyon, CNRS UMR 5510, MATEIS, F-69621 Villeurbanne, France

**09:45** **Pulsed filtered cathodic arc deposition of metastable cubic (V,Al)N thin films** **O 1.3**
Yeliz Unutulmazsoy1, Dmitry Kalanov1, Kyunghwan Oh1,2, Soheil K. Aghda3, Jürgen W. Gerlach1, Jochen M. Schneider3 and André Anders 1,2
1 Leibniz Institute of Surface Engineering (IOM), Permoserstr. 15, 04318 Leipzig, Germany, 2 Felix Bloch Institute of Solid State Physics, Leipzig University, Linnéstr. 5, 04103 Leipzig, Germany, 3 Materials Chemistry, RWTH Aachen University, Kopernikusstr. 10, 52074 Aachen, Germany

**10:00** **Enhancement of high-T oxidation resistance and stability of hard and optically transparent Hf-B-Si-C-N films by Y or Ho addition** **O 1.4**
Cervena, M., Zeman, P., Houska, J., Prochazka, M., Cerstvy, R., Haviar, S., Vlcek, J.
Department of Physics and NTIS - European Centre of Excellence, University of West Bohemia, Univerzitni 8, 306 14 Plzen, Czech Republic

**10:15** **Low carbon and nitrogen containing multicomponent alloys for tribological applications** **O 1.5**
N. C. Zoita (1), M. Dinu (1), A. C. Parau (1), A. E. Kiss (1), I. Pana (1), A. Sobetkii (4), M. Mondragon (3), C. E. A. Grigorescu (1), X. Almandoz (2), A. López-Ortega (2), A-M. Iordache (1), J. M. Izurrategi (3), M. I. Rusu (1), L. R. Constantin (1), V. Capatana (4), C. Bidalach (4)
(1) National Institute of Research and Development for Optoelectronics, 409 Atomistilor Str., 077125 Magurele, Romania, (2) TEKNIKER, Tribology Unit, Iñaki Goenaga 5, 20600 Eibar, Spain, (3) GOIZPER S. Coop., Antigua 4, 20577 Antzuola, Spain, (4) SC MGM STAR CONSTRUCT SRL, 7 Pancota St, Bucharest 022773, Romania.

**10:30** **Discussion**

**10:45**

**11:00** **Amorphous high entropy alloy layers with remarkable thermal stability** **O 1.6**
Alessandro Troglia, Mike van de Poll, Roland Bliem
Advanced Research Center for Nanolithography, Science Park 106, 1098 XG Amsterdam, The Netherlands, Advanced Research Center for Nanolithography, Science Park 106, 1098 XG Amsterdam, The Netherlands, Advanced Research Center for Nanolithography, Science Park 106, 1098 XG Amsterdam, The Netherlands, and Institute of Physics, University of Amsterdam, Science Park 904, 1098XH Amsterdam, The Netherlands

**11:15** **Microstructure and properties control of sputter-deposited Zr-Cu thin film metallic glasses** **O 1.7**
A. Borroto, M. Prudent, S. Bruyère, F. Bourquard, D. Pilloud, D. Horwat, M.A. Leroy, P. Steyer, J.P. Colombier, F. Garrelie, J.F. Pierson
Université de Lorraine, CNRS, IJL, F-54000 Nancy, France , Univ Lyon, UJM-Saint-Etienne, CNRS, Institute of Optics Graduate School, Laboratoire Hubert Curien (UMR CNRS 5516), F-42023 St-Etienne, France , IREIS, Groupe HEF, 42160 Andrézieux-Bouthéon, France , Univ. Lyon, INSA Lyon, UCBL, CNRS, MATEIS, 69621 Villeurbanne, France



**11:30** **ZrCu-based ternary Thin Film Metallic Glasses as a solution for orthopedic implants** **O 1.8**
Alina Vladescu, Anca C. Parau, Ioana M. Marinescu
National Institute of Research and Development for Optoelectronics - INOE 2000, 409 Atomistilor St., R077125, Magurele, Romania

**11:45** **Synthesis of nanoengineered ZrCuAl thin film metallic glasses by pulsed laser deposition with enhanced mechanical properties** **O 1.9**
Francesco Bignoli*(1)(2), Damien Faurie (1), Philippe Djemia (1), Florent Tetard (1), Fatiha Challali (1), Giancarlo Terraneo (3), Gregory Abadias (4), Laurent Belliard (5), Andrea Li Bassi (2), Matteo Ghidelli (1).
(1) LSPM-CNRS, UPR3407, Université Sorbonne Paris Nord, France, (2) Micro- and Nanostructured Materials Lab, Politecnico di Milano, Italy, (3) Laboratory of Supramolecular and Bio-Nanomaterials (SupraBioNanoLab), Politecnico di Milano, Italy, (4) Institut Pprime, University of Poitiers, France, (5) Institut des NanoSciences de Paris, Sorbonne Université Paris, France,

**12:00** **Discussion**

**12:15** **Lunch**

### Electrical and optical coatings : Nikolaos KALFAGIANNIS

**13:45** INV **Nano-Engineered Multifunctional Chromogenic and Transparent Conducting Oxide Coatings** **O 2.1**
L. Österlund, S. Kim, J. Montero, P. Song
Department of Materials Science and Engineering, The Ångström Laboratory, Uppsala University, P.O. Box 35, SE-75103 Uppsala, SWEDEN, Material Technology Research Institute, Pusan National University, Busan 46241, Korea

**14:15** **P-Type ZnO: Excimer Laser Annealing Induced Nitrogen Doping of Atomic Layer Deposition ZnO Thin Films** **O 2.2**
Jodie West*(1), Wayne Cranton (2), Mary O'Neill (1), Nikolaos Kalfagiannis (1), Demosthenes Koutsogeorgis (1)
(1) School of Science and Technology, Nottingham Trent University, Clifton Lane, Nottingham, NG11 8NS, UK, (2) Sheffield Hallam University, Materials and Engineering Research Institute, Sheffield, S1 1WB, UK * lead presenter

**14:30** **Implementation of electrical resistance tomography for conductivity mapping of nanostructured transparent conductor materials** **O 2.3**
Cultrera A., Milano G., De Leo N., Ricciardi C., Boarino L., Callegaro L.
Cultrera A. (1,*), Milano G. (1), De Leo N.(1), Ricciardi C. (2), Boarino L. (1), Callegaro L. (1). (1) INRIM – Istituto Nazionale di Ricerca Metrologica, , Turin, Italy. (2) Department of Applied Science and Technology, Politecnico di Torino, Turin, Italy.

**14:45** **Solution processable high – k dielectric based low-cost polymer nanocomposite for energy storage device applications** **O 2.4**
Suman Mandal1*, Yanbei Hou1, Ming Qing Wang1 and Kwang-Leong Choy1*
Institute for Materials Discovery University College London Torrington Place, London WC1E 7JE, UK

**15:00** **Inducing Circular and Linear Dichroism into a Hybrid Lead Halide Thin Film Semiconductor by Utilizing Chiral Amino Acids** **O 2.5**
Markus W. Heindl (1), Tim Kodalle (2), Natalie Fehn (3), Lennart K. Reb (4), Shangpu Liu (1), Constantin Harder (4,5), Maged Abdelsamie (6), Lissa Eyre (1), Ian D. Sharp (1), Stephan V. Roth (5,7), Peter Müller-Buschbaum (4,8), Aras Kartouzian (3), Carolin M. Sutter-Fella (2), Felix Deschler (1)
(1) Walter Schottky Institut and Department of Physics, Technical University of Munich, Am Coulombwall 4, 85748 Garching, Germany (2) Molecular Foundry, Lawrence Berkeley National Laboratory, 1 Cyclotron Rd., Berkeley, California 94720, United States (3) Catalysis Research Center and Chemistry Department, Technical University of Munich, Lichtenbergstraße 4, 85748 Garching, Germany (4) Lehrstuhl für Funktionelle Materialien, Physik-Department, Technische Universität München, James-Franck-Straße 1, 85748 Garching, Germany (5) Deutsches Elektronen-Synchrotron (DESY), Notkestr. 85, 22607 Hamburg, Germany (6) Materials Sciences Division, Lawrence Berkeley National Laboratory, 1 Cyclotron Rd., Berkeley, California 94720, United States (7) Department for Fiber and Polymer Technology, KTH Royal Institute of Technology, Teknikringen 56-58, 10044 Stockholm, Sweden (8) Heinz Maier-Leibnitz-Zentrum (MLZ), Technische Universität München, Lichtenbergstr. 1, 85748 Garching, Germany

**15:15** **Growth of InP/GaP nanostructures on Si substrate by PE-ALD for optoelectronic devices** **O 2.6**
Gudovskikh, A.S. *, Uvarov, A.V., Baranov, A.I., Maximova, A.A., Vyacheslavova E.A., Mozharov A.M.
Alferov University, St. Petersburg, Russia

**15:30** **Transparent persistent luminescence films: from design to shimmering perspectives.** **O 2.7**

Victor Castaing, Encarnación Arroyo, Manuel Ocaña, Ana Isabel Becerro, Gabriel Lozano and Hernán Míguez
Instituto de Ciencia de Materiales de Sevilla, Consejo Superior de Investigaciones Científicas – Universidad de Sevilla, Americo Vespucio 49, 41092, Sevilla, Spain.

**15:45** **Highly versatile up-converting oxyfluoride-based nanophosphor films** **O 2.8**

Thi Tuyen Ngo*(1), Elena Cabello-Olmo(1), Encarnación Arroyo(1), Ana I. Becerro(1), Manuel Ocaña(1), Gabriel Lozano(1), Hernán Míguez(1)
(1) Instituto de Ciencia de Materiales de Sevilla, Consejo Superior de Investigaciones Científicas-Universidad de Sevilla, Américo Vespucio 49, 41092, Sevilla, Spain

**16:00** **Double parameter multilayer sensor for biomedical applications** **O 2.9**

Ilze Aulika, Martins Zubkins, Jelena Butikova, Juris Purans
Institute of Solid State Physics, University of Latvia (ISSP UL), LV-1063, Riga, Latvia

**16:15** **Discussion**

## 1 : tba

**16:45** **Developing functional nanofibrous membranes modified with β-cyclodextrins for improved surface properties and performance** **O 3.1**

Saranya Rameshkumar, Ramesh Babu Padamati
BiOrbic - Bioeconomy Research Centre, University College Dublin, Belfield, Dublin 4, Republic of Ireland AMBER, CRANN Institute, Trinity College Dublin, Dublin 2, Republic of Ireland School of Chemistry, Trinity College Dublin, Dublin 2, Republic of Ireland

**16:45** **Phase and amplitude study of a nanofiber scaffold studied by dual-comb mid-IR spectroscopy and IR spectroscopic ellipsometry** **O 3.2**

Hinrichs, K. *(1), Blevins, B.(2,3), Furchner, A.(4), Yadavalli N.S.(2,3), Minko S.(2,3,4), Horvath R.(5), Mangold, M.(5).
(1) Leibniz-Institut für Analytische Wissenschaften - ISAS e.V., Schwarzschildstraße 8, 12489 Berlin, Germany, (2) Nanostructured Materials Laboratory, The University of Georgia, Athens, Georgia 30602, United States, (3) Department of Chemistry, The University of Georgia, Athens, Georgia 30602, United States, (4) Helmholtz-Zentrum Berlin für Materialien und Energie, Division Energy and Information (CatLab Project), Albert-Einstein-Straße 15, 12489 Berlin, (5) Department of Textile, Fiber, and Polymer Sciences, The University of Georgia, Athens, Georgia 30602, United States, (6) IRsweep AG, Laubisruetistrasse 44, 8712 Staefa, Switzerland, * lead presenter

**16:45** **ELECTROREDUCTION OF MOLYBDENUM: MECHANISMS AND ELECTRODEPOSITION FROM IONIC MELTS** **O 3.3**

Stetsyuk Tatyana1, Malyshev Viktor2, Gab Angelina2, Shakhnin Dmytro2
1 Frantsevich Institute for Problems of Materials Science of NAS of Ukraine, 2 Open International University of Human Development «Ukraine»

**16:45** **Nonwoven fibre meshes fabrication for oxygen sensing via quenching of phosphorescence** **O 3.4**

Nikolaos Salaris, Paul Haigh, Ioannis Papakonstantinou, Manish K. Tiwari
Nanoengineered Systems Laboratory,UCL Mechanical Engineering,University College London, London WC1E 7JE, United Kingdom/ Wellcome/EPSRC Centre for Interventional and Surgical Sciences (WEISS), University College London, London W1W 7TS, United Kingdom , School of Engineering, Newcastle University, NE1 7RU, Photonic Innovations Lab, Department of Electronic & Electrical Engineering, University College London, London WC1E 7JE, United Kingdom , Nanoengineered Systems Laboratory,UCL Mechanical Engineering,University College London, London WC1E 7JE, United Kingdom/ Wellcome/EPSRC Centre for Interventional and Surgical Sciences (WEISS), University College London, London W1W 7TS, United Kingdom

**16:45** **Simultaneous oblique deposition of nanocolumnar tungsten thin films with two sources** **O 3.5**

Valérie POTIN1, Houssem BOUKHALFA1 and Nicolas MARTIN2
1 Laboratoire Interdisciplinaire Carnot de Bourgogne (ICB), UMR 6303 CNRS Université Bourgogne Franche-Comté, 9 Av. A. Savary, BP 47 870, F-21078 Dijon Cedex, France 2 Institut FEMTO-ST, UMR 6174 CNRS Univ. Bourgogne Franche-Comté, 15B, Avenue des Montboucons, 25030 Besançon Cedex, France



**16:45** **Influence of the nucleation surface on the growth of epitaxial Al2O3 thermal CVD films** **O 3.6**

Maoxiang Zhu1,2,3 Sofiane achache1,2 Jean-François Pierson3 Frédéric Sanchette1,2
1. LASMIS, Université de Technologie de Troyes, Antenne de Nogent, Pôle Technologique de Sud Champagne, 52800 Nogent, France 2. Nogent International Centre for CVD Innovation (NICCI), LRC CEA-LASMIS, UTT, Antenne de Nogent, Pôle Technologique de Sud Champagne, 52800 Nogent, France 3. Institut Jean Lamour, UMR CNRS 7198, Université de Lorraine, 54000 Nancy, France

**16:45** **The effect of electrolyte compositions on the microstructure and properties of PEO coatings on pure Ti substrate** **O 3.7**

Victor Andrei, Viorel Malinovschi, Cristian Mihăilescu, Ioana Dulama, Alexandru Marin, Elisabeta Coacă, Dan Cristea
Victor Andrei - ELSSA LABORATORY SRL. Str.Crinului, nr.26, Pitești, 110109, Romania, andvic12@yahoo.com Viorel Malinovschi - University of Pitesti, 110040 Pitesti, Romania, Cristian Mihăilescu - National Institute for La, ser, Plasma and Radiation Physics, 077125 Magurele, Romania, Ioana Dulama - Valahia University, Târgoviște, Romania, Alexandru Marin - Institute for Nuclear Research, Pitesti,115400 Mioveni , Romania, Elisabeta Coacă - Institute for Nuclear Research, Pitesti,115400 Mioveni , Romania, Dan Cristea - Transilvania University,nr29, Eroilor Blvd. 500036 Brasov - Romania

**16:45** **Enhancement of mechanical and anticorrosion properties of the 5083 aluminium alloy surface** **O 3.8**

S.I. Sidorenko, S.M. Voloshko, B.N. Mordyuk, A.P. Burmak, N.V. Franchik, V.V. Mohylko, D.V. Stratoy
National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”

**16:45** **Synthesis of Composite Layers on Cu39Zn1Pb Brass Using Ultrasonic Impact Treatment** **O 3.9**

S.I. Sidorenko, B.N. Mordyuk, S.M.Voloshko, ?.P. Burmak, V.?. Zakiev, N.V. Franchik, V. V. Mohylko
National Technical University of Ukraine Igor Sikorsky Kyiv Polytechnic Institute

**16:45** **Radiation memory effect in GaN:Si thin film** **O 3.10**

R.Redko1,2, G.Milenin1, S.Redko1, V.Shvalagin3, V.Neymash4, V.Povarchuk4
1V. Lashkaryov Institute of Semiconductor Physics of the National Academy of Sciences of Ukraine, 41 Nauky Ave., 03028 Kyiv, Ukraine, 2State University of Telecommunications, 7 Solomenska str., 03680 Kyiv, Ukraine, 3L. Pysarzhevskiy Institute of Physical Chemistry of the National Academy of Sciences of Ukraine, 31 Nauky Ave., 03028 Kyiv, Ukraine, 4 Institute of Physics of the National Academy of Sciences of Ukraine, 46 Nauky Ave., 03028 Kyiv, Ukraine

**16:45** **Effects of 7 MeV proton irradiation on microstructural, morphological, optical, and electrical properties of FTO thin films** **O 3.11**

Bosco Oryema, Edward Jurua, Itani G. Madiba, Ishaq Ahmad, Samson O. Aisida, Fabian I. Ezema, & Malik Maaza
Bosco Oryema, Edward Jurua: Department of Physics, Mbarara University of Science and Technology, P.O Box 1410 Mbarara, Uganda. Bosco Oryema: Department of Physics, Muni University, P.O Box 725 Arua, Uganda. Itani G. Madiba, Fabian I. Ezema, Malik Maaza: UNESCO-UNISA Africa Chair in Nanosciences and Nanotechnology, College of Graduate Studies, University of South Africa, P.O Box 392, Pretoria, South Africa. NanoAfNet, Nanolaboratories, iThemba LABS-National Research Foundation of South Africa, P.O Box 722, Somerset West, Western Cape Province, South Africa Ishaq Ahmad, Samson O. Aisida, Fabian I. Ezema: National Centre for Physics, Quaid-i-Azam University Campus, Islamabad 44000, Pakistan Samson O. Aisida, Fabian I. Ezema: Department of Physics, Faculty of Natural and Applied Sciences, Coal City University, Enugu, Nigeria

**16:45** **2D layered chalcogenide crystals’ surfaces application as templates for indium deposited nanosystems formation** **O 3.12**

P.V. Galiy1, T.M. Nenchuk1, A. Ciszewski2, P. Mazur2, V.I. Dzyuba1, T.R. Makar1
1 Electronics and Computer Technology Department, Ivan Franko Lviv National University, 50 Dragomanov Street, Lviv, 79005, Ukraine, 2 Institute of Experimental Physics, University of Wrocław, pl. Maxa Borna 9, 50-204 Wrocław, Poland

**16:45** **Optical properties and sensing characteristics of ZnMeO ( Me: Mn, Co, Ni ) thin films** **O 3.13**

I. D. Stolyarchuk, O. V. Kuzyk, O. O. Dan’kiv, I. V. Hadzaman, Kh. O. Metsan, A. O. Krypak
Department of Physics, Drohobych Ivan Franko State Pedagogical University, 24 I.Franko str., 82100 Drohobych, Ukraine.

**16:45** **Bottom-up process to create localized copper conductive lines on fabrics** **O 3.14**
Justus Landsiedel (1) , Sandra Stroj (2) , Matthias Domke (2), Stephan Kasemann (3), Thomas Bechtold (1), Pham Tung (1), Noemí Aguiló-Aguayo (1)
(1): Research Institute of Textile Chemistry and Textile Physics, University of Innsbruck, Hoechstersstr. 73, 6850 Dornbirn, Austria, (2): Research Center for Microtechnology, Vorarlberg University of Applied Sciences, Hochschulstr. 1, 6850 Dornbirn, Austria

**16:45** **Evaluation of multilayer metal thin films adhesion using progressive scratch test** **O 3.15**
S.I. Sidorenko (1), V.I. Zakiev (1,3), I.O. Kruhlov (1), A.K. Orlov (1), S.V. Prikhodko (2), S.M. Voloshko (1)
1-National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", 37 Peremogy ave., 03056 Kyiv, Ukraine, 2-University of California Los Angeles, 2121K-Engineering 5, 420 Westwood Plaza, CA Los Angeles 90095-1595, USA, 3-National Aviation University, 1 Liubomyra Huzara ave., Kyiv 03058, Ukraine.

**16:45** **The influence of low-energy ion bombardment on the low-temperature formation of nanosized thin-film materials with shape memory** **O 3.16**
Sidorenko S.I., Kruhlov I.O., Orlov A.K., Voloshko S.M.
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", 37 Peremogy ave., 03056 Kyiv, Ukraine

**16:45** **A flower-like NiMn-LDH/poly-L-lysine composite for selective electrochemical sensing of tryptophan** **O 3.17**
Jing Qian1, Juan Yang1, Qijin Wan1, and Nianjun Yang2
1 School of Chemistry and Environmental Engineering, Key Laboratory for Green Chemical Process of Ministry of Education, Hubei Key Lab of Novel Reactor and Green Chemical Technology, Wuhan Institute of Technology, Wuhan 430073, China, 2 Institute of Materials Engineering, University of Siegen, Siegen 57076, Germany

**16:45** **Allergen detection using an optical fiber dual-zone aptasensor configuration** **O 3.18**
Iulia ANTOHE1*, Ioana KUNCSER1 and Gabriel SOCOL1
1 National Institute for Lasers, Plasma and Radiation Physics - INFLPR, 409 Atomistilor Street, 077125 Bucharest - Magurele, Romania * Iulia ANTOHE is the corresponding author: iulia.antohe@inflpr.ro

**16:45** **Conductivity of oxide layers in the early stages of their growth by the atomic layer deposition** **O 3.19**
A.V. Drozd, A.M. Yafasov
1. St. Petersburg Electrotechnical University "LETI", 2. St. Petersburg State University

**16:45** **Another class of piezoresistive thin film materials: antiferromagnetic chromium alloys** **O 3.20**
Silvan Schwebke, Günter Schultes
HTW Saar University of Applied Sciences

**16:45** **Optical properties and time stability of sputter-coated copper films obtained by HiPIMS and DCMS processes** **O 3.21**
Pana, I.*, Parau, A.C., Dinu, M., Kiss, A.E., Constantin, L.R., Vitelaru, C.
National Institute of Research and Development for Optoelectronics - INOE 2000, 077125, Magurele - Ilfov, Romania * lead presenter

**16:45** **On the Complex Interplay between Charge Injection, Electron Transport, and Quantum Efficiency in Ambipolar Trilayer OLETs** **O 3.22**
Salvatore Moschetto, Emilia Benvenuti, Hakan Husta, Resul Ozdemir, Antonio Facchetti, Michele Muccini, Mario prosa, Stefano Toffanin
Institute of Nanostructured Materials (ISMN) - National Research Council (CNR), Department of Nanotechnology Engineering Abdullah Gül University, Department of Chemistry and the Materials Research Center Northwestern University

**16:45** **TiO2/Cu2O and Cu2O/TiO2 thin film bilayers for gas sensing applications** **O 3.23**
D. Michoń*(1), M. Radecka (2), K. Zakrzewska (1).
(1) AGH, University of Science and Technology, Institute of Electronics, Faculty of Computer Science, Electronics and Telecommunications, Al. Mickiewicza 30, 30-059 Kraków, Poland (2) AGH, University of Science and Technology, Faculty of Materials Science and Ceramics, Al. Mickiewicza 30, 30-059 Kraków, Poland * lead presenter

**16:45** **Influence of deposition conditions of InGaN films grown by PECVD on the optical bandgap** **O 3.24**
Thomet, J. E.*(1), Singh A.K.(1), Gabriel C.(2), Ballif C.(1,2), Hessler-Wyser A. (1), Wyrsch N.(1), Boccard M.(1).
(1) Ecole Polytechnique de Lausanne, Switzerland (2) Centre Suisse d'Electronique et de Microtechnique, Switzerland



**16:45** **IR-emitting thin hybrid films, based on tris(8-hydroxyquinolate) Yb (III) in inorganic matrices** **O 3.25**
K.I. Runina, A.U. Sekacheva, L.V. Popkova, O.B. Petrova, I.R. Avetisov, I.Ch. Avetissov
Department of Chemistry and Technology of Crystals, D. Mendeleev University of Chemical Technology, MUCTR, Moscow, Russia

**16:45** **Optical and mechanical simulation of 2 photon polymerisation printed nanostructures combined with hydrogel thin films** **O 3.26**
Stefan Cesnik, Alexander Bergmann, Anna Maria Coclite
Graz University of Technology, Inffeldgasse 33/I, 8010 Graz, Graz University of Technology, Inffeldgasse 33/I, 8010 Graz, Graz University of Technology, Petersgasse 16, 8010 Graz

**16:45** **Effect of thermal annealing on solvent resistance of semiconducting polymer films** **O 3.27**
Shaoling Bai, Katherina Haase, Stefan Mannsfeld
Technische Universität Dresden

**16:45** **Control of the growth of nanostructures by Oblique-Angle Deposition (OAD) to create unique optical designs** **O 3.28**
Cécile Marsal1, Etienne Panchout1, Baptiste Giroire1, Cyril Dupeyrat2, Thierry Girardeau1, Fabien Paumier1
1) Institut Pprime, UPR 3346 CNRS-Université de Poitiers-ENSMA, SP2MI, 86962 Futuroscope-Chasseneuil cedex, France 2) Safran Electronics&Defense, 26 avenue des Hauts de la Chaume, 86280 Saint-Benoît, France

**16:45** **Functional textiles based on PEDOT:PSS/PANI/MWCNT tricomponent nanocomposites for electromagnetic shielding applications** **O 3.29**
Ana Rita Sousa *(1,2), José Barbosa (3), O. Salomé G.P. Soares (3), João Ferreira (4), Ana L. Gonçalves (4), Gilda Santos (4), Augusta Silva (4), José Morgado (4), Patrícia Soares (5), Sergey A. Bunyaev (1), Gleb N. Kakazei (1), Cristina Freire (2), M. Fernando R. Pereira (3), Clara Pereira (2), André M. Pereira (1)
(1) IFIMUP - Institute of Physics for Advanced Materials, Nanotechnology and Photonics, Physics and Astronomy Department, Faculty of Sciences, University of Porto, Rua do Campo Alegre s/n, 4169-007 Porto, Portugal, (2) REQUIMTE/LAQV, Chemistry and Biochemistry Department, Faculty of Sciences, University of Porto, Rua do Campo Alegre s/n, 4169-007, Porto, Portugal, 3) LSRE-LCM, Department of Chemical Engineering, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal, (4) CITEVE - Technological Centre for the Textile and Clothing Industry of Portugal, Rua Fernando Mesquita, 2785, 4760-034 Vila Nova de Famalicão, Portugal, (5) Cottonanswer, Rua dos Combatentes do Ultramar, 50, 4750-047 Lijó, Barcelos, Portugal,

**16:45** **Extrinsic activation of 2D polymerization using atomic clusters** **O 3.30**
L. Forcieri 1, Q. Wu 1, A. Quadrelli 1, S. Hou 1, D. Buceta 2, M. A. López-Quintela 2, C. Lambert 1, S. P. Jarvis 1
1 Physics Department, Lancaster University, Lancaster, LA1 4YB, UK. 2 Laboratory of Nanotechnology and Magnetism, University of Santiago de Compostela, E-15782 Santiago de Compostela, Spain.

**16:45** **Tuning Properties of Vapor Deposited, Oriented ZIF-8 via precursor density and conversion time** **O 3.31**
Marianne Kräuter, Rob Ameloot, Timothée Stassin, Alexander Cruz, Sabina Rodríguez-Hermida, Roland Resel, Anna Maria Coclite
Marianne Kräuter, Roland Resel, Anna Maria Coclite are affiliated with Institute of Solid State Physics, Graz University of Technology, Graz, Austria, e-mail: marianne.kraeuter@tugraz.at Rob Ameloot, Timothée Stassin, Alexander Cruz, Sabina Rodríguez-Hermida are affiliated with Center for Membrane Separations, Adsorption, Catalysis, and Spectroscopy, KU Leuven, Leuven, Belgium

**16:45** **Magnetite-Based Nanostructured Coatings Functionalized with Nigella sativa and Dicloxacillin for Improved Wound Dressings** **O 3.32**
Gabriela Dorcioman (1), Valentina Grumezescu *(1), Irina Negut (1), Doina Craciun (1), Florica Marinescu (2), Carmen Curutiu (2), Alina Maria Holban (2)
1) National Institute for Lasers, Plasma and Radiation Physics, Magurele-077125, Romania, 2) Faculty of Biology, University of Bucharest, Bucharest-077206, Romania

**16:45** **Multi-color nanosensors for ratiometric measurements of acidic, neural, and basic pH based on silica and polystyrene particles** **O 3.33**
Priyanka Srivastava, Isabella Tavernaro, Lena Scholtz, Ute Resch-Genger
Priyanka Srivastava,a Isabella Tavernaro,a Lena Scholtz,a,b Ute Resch-Genger,a
a Bundesanstalt für Materialforschung und -prüfung (BAM), Fachbereich 1.2 Biophotonik, Berlin, Deutschland b Institut für Chemie und Biochemie, Freie Universität Berlin, Takustr. 3, 14195 Berlin, Deutschland

**16:45** **Optically active Europium oxyhydroxide 2D-microstars embedded in thin films for photonic devices** **O 3.34**

A. Caño(1), F. Chacon(1), B. Galiana(2), G.B. Perea(2), A. de Andrés(3), A. Mariscal-Jiménez(4), R. Serna(1), J. Gonzalo(1).
(1) Laser Processing Group, Instituto de Optica, IO, CSIC, Serrano 121, 28006 Madrid, Spain, (2) Department of Physics, Escuela Politécnica Superior, Universidad Carlos III, 28911 Leganés, Madrid, Spain, (3) Instituto de Ciencia de Materiales de Madrid, ICMM, CSIC, Cantoblanco, 28049 Madrid, Spain, (4) Department of Information Technologies, Escuela Politécnica Superior, Universidad CEU-San Pablo, Campus Montepríncipe, Boadilla del Monte, Madrid 28668, Spain.

**16:45** **Zirconium oxynitride nanocatalysts by plasma sputtering and cluster beam deposition tool for the oxygen reduction reaction** **O 3.35**

S. Atmane 1, N. Neha2, S. Valange2, C. Coutanceau2, S. Baranton2, P. Brault1, A.-L. Thomann1, E. Millon1, S. Ibrahim1, A. Caillard1
1 GREMI, Université d'Orléans, CNRS, 14 rue d'Issoudun, BP6744, 45067 Orléans cedex 2, France , 2 IC2MP, Université de Poitiers, CNRS, 4 rue Michel Brunet, 86022 Poitiers, France

**16:45** **Nanoplasmonic strain sensing with thin films containing Au nanoparticles dispersed in an oxide matrix** **O 3.36**

Marco S. Rodrigues, Joel Borges, Filipe Vaz
Centro de Física, Universidade do Minho, Campus de Gualtar, Braga, Portugal

**16:45** **Halogenated Polymer Thin Film with Ultra-High Refractive Index and Excellent Thermal Stability** **O 3.37**

Ni Huo, Jeremy Rivkin, Wyatt E.Tenhaeff*
University of Rochester Department of Chemical Engineering



**Tuesday may 31**

## Nitride and oxide functional coatings : Jiri HOUSKA

**09:00** INV **Mesoporous coatings of metal oxynitride nanoparticles produced by reactive magnetron sputtering** **O 4.1**

Andrei Choukourov1, Pavel Pleskunov1, Daniil Nikitin1, Kateryna Biliak1, Mariia Protsak1, Miroslav Cieslar1, Yuriy Pihosh2, Vikas Nandal3, Kazuhiko Seki3, Kazunari Domen2
1. Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic, 2. The University of Tokyo, Japan, 3 National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

**09:30** **Electrical and optical characterization of high entropy (NbTaTiVZr)Nx films** **O 4.2**

S. Bachinin1,2, V. Grand d?Esnon1, D. Pilloud1, G. Pierson1, C. Gendarme1, A. Nominé1,2, V.A. Milichko1,2, J.F. Pierson1
1 Université de Lorraine, CNRS, IJL, Nancy, France 2 School of Physics and Engineering, ITMO University, St. Petersburg, Russia

**09:45** **Maximum achievable N content in atom-by-atom growth of amorphous (Si)-(B)-C-N films** **O 4.3**

Jiri Houska
Department of Physics and NTIS - European Centre of Excellence, University of West Bohemia, Univerzitni 8, 30614 Plzen, Czech Republic, email jhouska@kfy.zcu.cz

**10:00** **Tuning alumina matrix using MF and HiPIMS sputtering with gold nanoparticles for plasmonic coatings** **O 4.4**

Marta Ferreira, Jean-Baptiste Chemin, Dr. Patrick Choquet
Luxembourg Institute of Science and Technology (LIST)

**10:15** **Surface engineering of flexible Al2O3 substrate by chemical solution deposition** **O 4.5**

M. Nasui, T. Petrisor Jr., R. B. Sonher , M.S. Gabor, L. Ciontea , T. Petrisor
Centre for Superconductivity, Spintronics and Surface Science, Technical University of Cluj-Napoca, Str. Memorandumului, Nr. 28, 400114 Cluj-Napoca, Romania

**10:30** **Discussion**

**10:45**

**11:00** **Coating of SPIONs with calix[4]arenes: enhanced stability, protective effect, and robust post-functionalization with PEI** **O 4.6**

Carlos Moya (1), Ivan Jabin (2), and Gilles Bruylants (1)
(1) Engineering of Molecular NanoSystems, Ecole Polytechnique de Bruxelles, Université libre de Bruxelles (ULB). Avenue F. D. Roosevelt 50, CP165/64, B-1050 Brussels, Belgium. (2) Laboratoire de Chimie Organique, Service de Chimie et PhysicoChimie Organiques, Université libre de Bruxelles (ULB), Avenue F.D. Roosevelt 50, CP160/06, 1050 Brussels, Belgium.

**11:15** **TiO2 thin film encapsulated moth-eye nanostructured PMMA surfaces with enhanced stability** **O 4.7**

Tomas Kubart1, Daniel F. Fernandes1, Alejandra Jacobo-Martín2, Jaime J. Hernández2, Eduardo Solano3, Juan Carlos Martínez3, Miguel A. Monclús4, Jon M. Molina-Aldareguia4, Isabel Rodríguez2
1Uppsala University, Solid State Electronics, Box 65, 751 03 Uppsala, Sweden, 2Madrid Institute for Advanced Studies in Nanoscience (IMDEA Nanoscience), Ciudad Universitaria de Cantoblanco, C/ Faraday 9, 28049 Madrid, Spain. 3 ALBA Synchrotron, Carrer de la Llum 2-26,08290 Cerdanyola del Vallès, Barcelona, Spain. 4 IMDEA Materials Institute, C/ Eric Kandel 2, Tecnogetafe, Getafe. 28906 Madrid, Spain.

**11:30** **Nano-Faceted Growth of Polar-Oxide Thin Films: The Case of MgO(111) and NiO(111) Surfaces** **O 4.8**

Dr Adam Kerrigan, Prof Michael Weinert, Prof Keith McKenna, Prof Vlado Lazarov
University of York, University of Wisconsin-Milwaukee, University of York, University of York

**11:45** **Nanoporous structures by reduction of single-phase Cu oxide thin films : in-situ time-resolved XRD study** **O 4.9**

Claudia Cancellieri 1, Yeliz Unutulmazsoy 1*, Luchan Lin 1**, Lars P.H. Jeurgens 1
1 Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Joining Technologies & Corrosion, Überlandstrasse 129, 8600 Dübendorf, Switzerland, *Present address: Leibniz Institute for Surface Engineering, Permoserstrasse 15, 04318, Leipzig, Germany, **Present address: School of Materials Science and Engineering, Shanghai Jiaotong University, Shanghai 200240, China,

**12:00** **Discussion**

## Electronics and sensing applications of thin films : Jean-François PIERSON

**15:00** INV **Upscalable nanomanufacturing of large-area thin-film electronics** **O 5.1**
Thomas D. Anthopoulos
King Abdullah University of Science and Technology (KAUST), KAUST Solar Centre, Kingdom of Saudi Arabia

**15:30** **Piezoelectric nanostructured α-Quartz films on Silicon: from material to new devices** **O 5.2**
Claire Jolly* (1), David Sánchez-Fuentes (1), Dilek Cakiroglu (1). A. Gomez (1), Raissar Rathar (1,2), Laura Picas (2), A.Carretero-Genevrier. (1) * lead presenter
(1) Institut d'Electronique et des Systemes (IES), CNRS, Université de Montpellier, 860 Rue de Saint Priest 34095 Montpellier, France (2) Institut de Recherche en Infectiologie de Montpellier (IRIM), CNRS UMR 9004–Université de Montpellier, 34293 Montpellier, France

**15:30** **Generation of Airy-like beam using laser inscribed elements** **O 5.3**
Justas Ber?kys, Sergej Orlov
State research institute Center for Physical Sciences and Technology, Department of Fundamental Research

**15:45** **Passivating polycrystalline copper with samarium oxide for use as a reflective cathode In organic photovoltaics** **O 5.4**
Simon Abrahamczyk, Marc Walker, Yisong Han, Steven Huband, Ross Hatton
Department of Chemistry, University of Warwick, Department of Physics, University of Warwick, Analytical Science CDT, Senate House, University of Warwick

**16:00** **Controlled formation of Diketopyrrolopyrrole-based polymer nanowires for high-performance Organic Field-Effect Transistors** **O 5.5**
Preetam Dacha, Mike Hambsch, Markus Löffler, Stefan C. B. Mannsfeld
Preetam Dacha, Mike Hambsch and Stefan C. B. Mannsfeld: Center for Advancing Electronics Dresden (cfaed) and Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Dresden 01069, Germany. Markus Löffler – Dresden Center for Nanoanalysis (DCN), Center for Advancing Electronics Dresden (cfaed), Technische Universität Dresden, Dresden 01069, Germany.

**16:15** **Discussion**

**16:30**

**16:45** **A novel wearable sensing device based on Ti-based nanostructured thin films for neuromuscular rehabilitation on elderly** **O 5.9**
Hugo Azevedo, Claudia Lopes, Nelson Azevedo, Juliana Cruz, Raul Fangueiro, Filipe Vaz
1. Centre of Physics, University of Minho, Guimarães, 4800-058, Portugal 2. IMPETUS, Estrada da Praia 1755, 4740-696 Barqueiros, Portugal 3. Centre for Textile Science and Technology (2C2T), University of Minho, Guimarães, 4800-058, Portugal

**17:00** **Dissolved and gaseous oxygen sensing using Organic Electrochemical Transistors (OECT) for in-vitro monitoring and work-safety ap** **O 5.6**
Francesco Decataldo, Filippo Bonafè, Federica Mariani, Martina Serafini, Marta Tessarolo, Isacco Gualandi, Erika Scavetta, Beatrice Fraboni
Department of Physics and Astronomy, Alma Mater Studiorum - University of Bologna Francesco Decataldo, Filippo Bonafè, Marta Tessarolo, Beatrice Fraboni Department of Industrial Chemistry, Alma Mater Studiorum - University of Bologna, Viale Risorgimento 4, 40136, Bologna (Italy) Federica Mariani, Martina Serafini, Isacco Gualandi, Erika Scavetta

**17:15** **Nanofabrication of gradient composition alloy nanoparticle arrays for hydrogen sensing.** **O 5.7**
Andersson, C.Å.E.* (1), Serebrennikova, O., Tiburski, C. (1), Alekseeva, S., Fritzsche, J. (1), Langhammer, C. (1)
(1) Department of Physics – Chalmers University of Technology, Sweden

**17:30** **Vertical few-layered 3D-MoSe2 porous nanowall thin films prepared by sputtering for NO2 sensors** **O 5.8**
Jyoti Jaiswal
Centre of Advanced Research, Department of Physics, Rajiv Gandhi University, Arunachal Pradesh 791112, India

**17:45** **Discussion**



**Wednesday june 1**

## Growth strategies for advanced materials : tba

**09:00** INV **Growth manipulation strategies of ultrathin Ag layers based on gaseous additives: insights from real-time studies** **O 6.1**
G. Abadias (1), D. Babonneau (1), B. Krause (2), A. Michel (1), Y. Robin (1), A. Resta (3), A. Vlad (3), A. Coati (3), A. Jamnig (1), K. Sarakinos (4)
1. Institut Pprime, University of Poitiers -CNRS-ENSMA, France, 2. Karlsruhe Institute of Technology, Germany, 3. Synchrotron SOLEIL, France 4. University of Helsinki, Finland

**09:30** **Environmental and economic assessment of advanced coatings over their whole life cycle: a case study on HiPIMS and TiAlN.** **O 6.2**
Merlo Antoine, Léonard Grégoire
Uliège

**09:45** **The effect of interface stress on the W/W grain boundary grooving in Cu/W nano-multilayers** **O 6.3**
A.V. Druzhinin 1, C. Cancellieri 2, L. P.H. Jeurgens 2, B.B. Straumal 1,3,4
1. Institute of Solid State Physics, Russian Academy of Sciences, Moscow district, Academician Ossipyan str., Chernogolovka 142432, Russian Federation, 2. Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Joining Technologies and Corrosion, Überlandstrasse 129, Dübendorf CH-8600, Switzerland, 3. Karlsruhe Institute of Technology (KIT), Institute of Nanotechnology, Hermann-von-Helmholtz-Platz 1, Eggenstein-Leopoldshafen 76344, Germany, 4. National University of Science and Technology «MISIS», Leninskiy prospect 4, Moscow 119049, Russian Federation

**10:00** **Nanostructured Janus Tungsten Molybdenum thin films prepared by co-sputtering GLAD technique** **O 6.4**
Valérie POTIN1, Houssem BOUKHALFA1, Nicolas MARTIN2
1 Laboratoire Interdisciplinaire Carnot de Bourgogne (ICB), UMR 6303 CNRS Université Bourgogne Franche-Comté, 9 Av. A. Savary, BP 47 870, F-21078 Dijon Cedex, France 2 Institut FEMTO-ST, UMR 6174 CNRS Univ. Bourgogne Franche-Comté, 15B, Avenue des Montboucons, 25030 Besançon Cedex, France

**10:15** **Magnetron sputtering deposition in helium atmospheres to design porous nanostructured thin films** **O 6.5**
S. Ibrahim1, A. Fernandez1,2, P. Brault1, A. Saulduboi1, D. Hufschmidt2, M. C. Jiménez de Haro2, A. Petit1, A. Caillard1, T. Sauvage3, P. Desgardin3, Marie-France Barthe 3, A.L. Thomann1
1 GREMI, UMR7344 CNRS/Université d'Orléans, rue d'Issoudun, BP 6744, 45067 Orléans cedex2, FRANCE 2 Instituto de Ciencia de Materiales de Sevilla, CSIC - Universidad de Sevilla, Av. Américo Vespucio 49, 41092, Seville, Spain 3 CEMHTI, UPR3079 CNRS, 1D Avenue de la Recherche Scientifique, 45071 Orléans, France

**10:30** **Discussion**

**10:45**

**11:00** **Importance of the plasma-liquid interactions in the sputtering deposition of Pt nanoparticles in glycerol** **O 6.6**
S. Atmane , A. Saulduboi, P. Brault, A. Caillard
GREMI, Université d'Orléans, CNRS, 14 rue d'Issoudun, BP6744, 45067 Orléans cedex 2, France

**11:15** **Fast fabrication of cellulose-based nanocomposite electrodes via spray deposition** **O 6.7**
Marie Betker, Constantin Harder, Elisabeth Erbes, Julian Heger, Alexandros E. Alexakis, Benedikt Sochor, Qing Chen, Matthias Schwartzkopf, Peter Müller-Buschbaum, Simone Techert, Eva Malmström, Daniel L. Söderberg, Stephan V. Roth
M. Betker, C. Harder, E. Erbes, Dr. B. Sochor, Dr. Q. Qing, Dr. M. Schwartzkopf, Prof. S. Techert, Prof. S. V. Roth, Deutsches Elektronen Synchrotron, Notkestraße 85, 22607 Hamburg, Germany, M. Betker, A. E. Alexakis, Prof. E. Malmström, Prof. L. D. Söderberg, Prof. S. V. Roth, Fibre and Polymer Technology, KTH Royal Institute of Technology, Teknikringen 56-58, 11428 Stockholm, A. E. Alexakis, Prof. E. Malmström, Prof. D. L. Söderberg, Wallenberg Wood Science Center, Royal Institute of Technology KTH, Teknikringen 52, 10044 Stockholm, Sweden, C. Harder, J. Heger, Prof. P. Müller-Buschbaum, Lehrstuhl für Funktionelle Materialien, Physik Department, Technische Universität München, James-Franck Straße 1, 85748 Garching, Germany, E. Erbes, Institute for X-ray Physics, Goettingen University, Friedrich Hund Platz 1, 37077 Goettingen, Germany

**11:30** **Towards high throughput molecular layer deposition of alucone films** **O 6.8**
Hardik Jain, Mariadriana Creatore, Paul Poodt
Hardik Jain, TNO/Holst Centre, 5656 AE Eindhoven, Netherlands and Department of Applied Physics, Eindhoven University of Technology, 5600 MB Eindhoven, The Netherlands, Mariadriana Creatore, Department of Applied Physics, Eindhoven University of Technology, 5600 MB Eindhoven, The Netherlands, Paul Poodt, TNO/Holst Centre, 5656 AE Eindhoven, Netherlands and Department of Applied Physics, Eindhoven University of Technology, 5600 MB Eindhoven, The Netherlands

**11:45** **Nanocomposite thin film deposition by low-pressure misty plasmas** **O 6.9**
Simon Chouteau1-2, Maria Mitronika1, Mireille Richard-Plouet1, Antoine Goullet1, Agnès Granier1, Luc Safford2
1 Université de Nantes, CNRS, Institut des Matériaux Jean Rouxel, IMN, F-44000 Nantes, France, 2 Département de Physique, Université de Montréal, Montréal, Québec H3C 3J7, Canada

**12:00** **Discussion**

## Optical coatings : Jean-François PIERSON

**15:00** **Large area/low deposition temperature nanocrystalline diamond films for protective optical coatings** **O 7.1**
Chaimaa Mahi, Ovidiu Brinza, Riadh Issaoui, Jocelyn Achard, Fabien Bénédic
Université Sorbonne Paris Nord, LSPM, CNRS, UPR 3407, Villetaneuse, France

**15:15** **The effect of subvalent and isovalent impurities on the structural and optical properties of hafnia-based thin films** **O 7.2**
L. Khomenkova1,2, T. Torchynska3, N. Korsunska1, O. Melnichuk4, L. Melnichuk4, X. Portier5, F. Gourbilleau5
1) V.Lashkaryov Institute of Semiconductor Physics at the NASU, 41 Pr. Nauky, Kyiv 03028, Ukraine, E-mail: khomen@ukr.net, 2) National University "Kyiv-Mohyla Academy", 2 Skovorody str., Kyiv, 04170, Ukraine, 3) Instituto Politécnico Nacional - IPN, ESFM, Mexico City, 07738, Mexico, 4) Mykola Gogol State University of Nizhyn, 2 Hrafska Str., Nizhyn 16600, Ukraine, 5) CIMAP Normandie Univ, ENSICAEN, UNICAEN, CEA, CNRS, 6 Boulevard Maréchal Juin, 14000 Caen, France

**15:30** **Low temperature deposition and crystallization control of SiC thin layers for waveguide applications** **O 7.5**
Vincent Tabouret (1), Alexandre Crisci (1), Magali Morais (1), Grégory Berthomé (1), Didier Chaussende*(1)
(1) Univ. Grenoble Alpes, CNRS, Grenoble INP (Institute of engineering), SIMaP, 38000 Grenoble, France

**15:45** **Discussion**

**16:00**

## 2 : Jean-François PIERSON

**16:45** **Flexible surface-enhanced Raman spectroscopy sensors for Rapid and direct biomolecule detection** **O 8.1**
Gaidi, M (1, 2)*, Daoudi, K (1, 2), Columbus, S (2), Ramachandran, K (2), Tlili, A (3), El Khakani, M. A (4)
(1) Department of Applied Physics and Astronomy, University of Sharjah, P. O. Box 27272 Sharjah, United Arab Emirates (2) Centre for Advanced Materials Research, Research Institute of Sciences and Engineering, University of Sharjah, P. O. Box 27272 Sharjah, United Arab Emirates (3) Department of Applied Biology, University of Sharjah, P. O. Box 27272 Sharjah, United Arab Emirates (4) Institut National de la Recherche Scientifique, INRS-Énergie, Blvd. Lionel-Boulet, Varennes, QC, Canada

**16:45** **Bioactive coatings used for biodegradation control of magnesium-based alloys** **O 8.2**
Gabriela Juravlea1,2*, Alina Vladescu1, Anca C. Parau1, Diana M. Vranceanu2, Cosmin M. Cotrut2
1 National Institute of RD for Optoelectronics INOE2000, Department for Advanced Surface Processing and Analysis by Vacuum Technologies, 409 Atomistilor St., Magurele, RO77125, Romania, gabriela.juravlea@inoe.ro, alinava@inoe.ro, anca.parau@inoe.ro, 2 University Politehnica of Bucharest, 313 Spl. Independentei, Bucharest, RO60042, Romania, cosmin.cotrut@upb.ro, diana.vranceanu@upb.ro * Correspondence: gabriela.juravlea@inoe.ro, Tel.: +40-21-457-57-59



**16:45** **MAPLE Efficient Antimicrobial Platform for Extended Release of Drugs** **O 8.3**
Anita Ioana Visan 1,* , Carmen Ristoscu 1 , Gianina Popescu-Pelin 1, Mihai Sopronyi 1, Consuela Elena Matei 1 , Gabriel Socol 1 , Mariana Carmen Chifiriuc 2,3 , Coralia Bleotu 3,4 , David Grossin 5 , Fabien Brouillet 6 , Sylvain Le Grill 6 , Ghislaine Bertrand 5, Irina Zgura 7 , Rodica Cristescu 1 and Ion N. Mihailescu
1 National Institute for Laser, Plasma and Radiation Physics, 077125 Magurele, Ilfov, Romania, 2 Department of Microbiology, Faculty of Biology, University of Bucharest, 060101 Bucharest, Romania, 3 Earth, Environmental and Life Sciences Division, Research Institute of the University of Bucharest,050567 Bucharest, Romania, 4 Stefan S. Nicolau Institute of Virology, 285 Mihai Bravu Ave, Sect. 3, PO 77, PO Box 201,030304 Bucharest, Romania 5 CIRIMAT, CNRS, INP-ENSIACET, Université de Toulouse, 4 allée Emile Monso, 31030 Toulouse, France, 6 CIRIMAT, CNRS, Université Toulouse 3-Paul Sabatier, 35 Chemin des Maraîchers, CEDEX 9,31062 Toulouse, France, 7 National Institute of Materials Physics, 077125 Magurele, Ilfov, Romania, * Correspondence: anita.visan@inflpr.ro ,

**16:45** **Implant coatings based on low-cost sustainable natural resources for infection prevention** **O 8.4**
Anita Ioana Visan 1,* , Carmen Ristoscu 1 , Gianina Popescu-Pelin 1, Mariana Carmen Chifiriuc 2,3 , Marcela Popa 2, George Stan 4 , T Tite 4, and Ion N. Mihailescu 1
1 National Institute for Laser, Plasma and Radiation Physics, 077125 Magurele, Ilfov, Romania, 2 Department of Microbiology, Faculty of Biology, University of Bucharest, 060101 Bucharest, Romania, 3 Earth, Environmental and Life Sciences Division, Research Institute of the University of Bucharest,050567 Bucharest, Romania, 4National Institute of Materials Physics, 077125 Magurele, Ilfov, Romania,

**16:45** **Rub-resistant Antibacterial Surface Conversion Layer on Stainless Steel** **O 8.5**
Haiyue Huang1, Olivia Willilams Barber2, Zhilong Yu1, Hun Park1, Xiaobing Hu1,3, Xinqi Chen3,4, Chun-Hu Chen5, Erica M. Hartmann2* and Jiaxing Huang1*
1 Department of Materials Science and Engineering, Northwestern University, Evanston, IL 60208, USA, 2 Department of Civil and Environmental Engineering, Northwestern University, Evanston, IL 60208, USA, 3 The NUANCE Center, Northwestern University, Evanston, IL 60208, USA, 4 Department of Mechanical Engineering, Northwestern University, Evanston, IL 60208, USA, 5 Department of Chemistry, National Sun Yat-sen University, Kaohsiung 80424, Taiwan

**16:45** **Tuning the Structure of Metallic Thin Films with Pulsed Laser Deposition** **O 8.6**
Alessandro Troglia, Roland Bliem
Advanced Research Center for Nanolithography (ARCNL), Science Park 106, 1098 XG Amsterdam, The Netherlands, Advanced Research Center for Nanolithography (ARCNL), Science Park 106, 1098 XG Amsterdam, The Netherlands and Institute of Physics, University of Amsterdam, Science Park 904, 1098 XH Amsterdam, The Netherlands

**16:45** **Facile spin-coating deposition of crack-free TiO2 -rGO thin films for solar harnessing devices** **O 8.7**
Timur Sh. Atabaev, Laura Khamkhash, Anara Molkenova
Nazarbayev University, Nur-Sultan, Kazakhstan

**16:45** **Polyester filter hybrid with conductive nanowires and photocatalytic nanoparticles for air purification** **O 8.8**
Ren-Yao Zheng, Wen-Yang Lien, Gen-Wen Hsieh*
Institute of Lighting and Energy Photonics, College of Photonics, National Chiao Tung University, No. 301, Gaofa 3rd Rd., Guiren District, Tainan 71150, Taiwan (R.O.C.) * Corresponding author (G.-W.H.) Email: cwh31@nctu.edu.tw

**16:45** **Dynamics of kinetic roughening and wettability in two-dimensional materials** **O 8.9**
Abhijeet Das, Sanjeev Kumar
Centre for Advanced Research, Department of Physics, Rajiv Gandhi University, Arunachal Pradesh – 791112, India

**16:45** **Antibacterial activity, cytotoxicity, and biocorrosion behavior of high-entropy alloy coating doped with immobilized AgNPs** **O 8.10**
Armin Asghari Alamdari, Saman Hendessi, Ugur Unal, Amir Motallebzadeh*
Materials Science and Engineering, Koç University, Sariyer 34450, Istanbul, Turkey, Koç University Surface Science and Technology Center (KUYTAM), Koç University, Sariyer, 34450, Istanbul, Turkey, Department of Chemistry, Koç University, Sariyer, 34450 Istanbul, Turkey

**16:45** **Enhancing the activity of photocatalytic coatings by addition of 2D g-C3N4** **O 8.11**
Papailias, I.*(1), Giannakopoulou, T. (1), Todorova, N. (1), Anyfantis, G.C. (2), Arabatzis, I. (2), Trapalis, C. (1).
(1) Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", Athens, Greece. (2) NanoPhos S.A., Science and Technology Park of Lavrio, Lavrio, Greece.

**16:45** **FORMATION OF NANOSIZE FILMS ON THE BASIS OF CoSb3** **O 8.12**

R.A. Shkarban, Yu.M. Makogon, S.I. Sidorenko
National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", 37 Peremohy Ave., UA-03056 Kyiv, Ukraine

**16:45** **PLD synthesis of hydroxyapatite-alumina-zeolite composite coatings from natural resources for biomedical applications** **O 8.13**

G. Popescu-Pelin1, C. Ristoscu1, L. Duta1, G.E. Stan2, M. Popa3,4, M.C. Chifiriuc3,4, F.N. Oktar5,6, and I.N. Mihailescu1
1National Institute for Lasers, Plasma and Radiation Physics, Magurele 077125, Romania 2National Institute of Materials Physics, Magurele 077125, Romania 3Microbiology Department, Faculty of Biology, University of Bucharest, Bucharest 060101, Romania 4Research Institute of the University of Bucharest (ICUB), University of Bucharest, Bucharest 050095, Romania 5Department of Bioengineering, Faculty of Engineering, University of Marmara, Kadikoy 34722, Istanbul, Turkey 6Center for Nanotechnology & Biomaterials Research, University of Marmara, Kadikoy 34722, Istanbul, Turkey

**16:45** **Combinatorial pulsed laser deposition of multifunctional coatings for bone tissue treatment** **O 8.14**

Gianina Popescu-Pelin1, Cristian Butnaru1, Izabela Jinga1, Livia Sima2, Marioara Chiritoiu2, Gabriela Chiritoiu2, Felix Sima1, Gabriel Socol1
1National Institute for Lasers, Plasma and Radiation Physics, Magurele 077125, Ilfov, Romania 2Institute of Biochemistry of the Romanian Academy, Bucharest, Romania

**16:45** **Influence of surface pre-treatments on the anti-corrosion and cytotoxicity of Mg1Ca biodegradable alloy** **O 8.15**

Neves, C.S.*(1), Sousa, I.(1), Freitas, M.A.(1), Fraga, S.(2,3), Moreira, L.(2,3), Teixeira, J.P.(2,3), Silva, R.M.(1), Silva, R.F.(1), Starykevich, M.(1), Scharnagl, N.(4), Zheludkevich, M.L.(4,5), Ferreira, M.G.S.(1), Tedim, J.(1).
(1)Department of Materials Engineering and Ceramics, CICECO, University of Aveiro, Portugal (2)EPIUnit - Instituto de Saúde Pública, Universidade do Porto, Portugal (3)Departamento de Saúde Ambiental, Instituto Nacional de Saúde Doutor Ricardo Jorge, Portugal (4)Institute of Surface Science, Helmholtz-Zentrum Hereon, Germany (5)Institute for Materials Science, Faculty of Engineering, University of Kiel, Germany

**16:45** **Effect of the composition on solid state dewetting behavior of CoCu thin films** **O 8.16**

Farzam, F.*(1), Bellón, B.(1), Ghidelli, M.(1,2), Duarte Correa, M.J.(1), Chatain, D.(3), Dehm, G.(1).
(1)Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, Germany, (2) Laboratoire des Sciences des Procédés et des Matériaux (LSPM), CNRS, Université Sorbonne Paris Nord, Villetaneuse, France, (3)Aix-Marseille Univ, CNRS, CINaM, Marseille, France, * lead presenter

**16:45** **New Perspective to Evaluate the Role Nanoceria for Lung Cancer via Molecular Mechanism Analysis** **O 8.17**

Jamila Bayramova, Feride Melisa Bilgin, Melis Denizci Oncu, Digdem Aktoprakligil Aksu, Soner Aksu, Ahsen Morva Yilmaz, Hulya Yazici, Hilal Yazici
TUBITAK-Marmara Research Center, Genetic Engineering and Biotechnology Institute, Kocaeli 41470, Turkey, Oncology Institute, Istanbul University, Istanbul 34295, Turkey, Molecular and Translational Biomedicine Program, Acibadem Mehmet Ali Aydinlar University, Istanbul 34684, Turkey, Istanbul Health and Technology University, Istanbul, 34025, Turkey, Istanbul Arel University, Faculty of Medicine, Department of Medical Biology and Genetics, Istanbul, 34010, Turkey.

**16:45** **Physico-chemical properties and in vitro behavior of Zn doped HAp based coatings deposited on nanostructured surface** **O 8.18**

D.M. Vranceanu1, I.C. Ionescu1, E. Ungureanu1, A. Kiss2, G.A. Juravlea1,2, R.I. Zamfir1, I. Titorencu3, A. Vladescu2, C.M. Cotrut1
1 University POLITEHNICA of Bucharest, 313 Independeței Street, Bucharest, Romania, 2 National Institute for Optoelectronics, 409 Atomistilor Street, Magurele, Bucharest, Romania, 3 Institute of Cellular Biology and Pathology "Nicolae Simionescu", 8 B.P.HASDEU street, Bucharest, Romania

**16:45** **Smart Bandage for Wound Healing Monitoring** **O 8.20**

Federica Mariani (1)*, Isacco Gualandi (1), Martina Serafini (1), Danilo Arcangeli (1), Francesco Decataldo (2), Luca Possanzini (2), Marta Tessarolo (2), Beatrice Fraboni (2), Domenica Tonelli (1), Erika Scavetta (1)
(1) Dipartimento di Chimica Industriale "Toso Montanari", Università di Bologna, Viale del Risorgimento 4, 40136 Bologna, Italy (2) Dipartimento di Fisica e Astronomia, Università di Bologna, Viale Berti Pichat 6/2, 40127 Bologna, Italy
*federica.mariani8@unibo.it



**16:45** **Influence of femtosecond laser surface texturing on the biological properties of ZrCuAg thin film metallic glasses** **O 8.21**

Florian Dupla*(1), Solène Comby-Dassonneville(1), Mathilde Prudent(2), Alejandro Borroto(3), Christelle Der Loughian(1), Laurent Gremillard(1), Florence Garrelie(2), Florent Bourquard(2), Jean-Philippe Colombier(2), Marthe Rousseau(1, 4), Jean-François Pierson(3), Philippe Steyer(1).
(1) University of Lyon, INSA Lyon, UCBL, CNRS, MATEIS Laboratory, 69621 Villeurbanne, France, (2) University of Lyon, UJM-Saint-Etienne, CNRS, Institute of Optics Graduate School, Laboratoire Hubert Curien UMR CNRS 5516, F-42023 St-Etienne, France, (3) Université de Lorraine, CNRS, Institut Jean Lamour, F-54000 Nancy, France, (4) SAINBIOSE Laboratory INSERM, U1059, University of Lyon, Jean Monnet University, F-44270 Saint-Priest-en-Jarez, France.

**16:45** **Cyclic olefin polymer (COP) and copolymer (COC) biofunctionalization with 4-carboxyphenyl diazonium salts: an optimization study** **O 8.22**

Z. Chakim1, A.R. Protopapadaki1, C. O'Sullivan2 N. Okulova2, J. Kafka2, G. Tsekenis1
1Biomedical Research Foundation of the Academy of Athens, 11527, Athens, Greece , 2INMOLD A/S, Savsvinget 4B, DK-2970 Horsholm, Denmark

**16:45** **Antibacterial activity of graphene and reduced graphene oxide coatings** **O 8.23**

Todorova, N. *(1), Marinova, V.(2), Dimitrov, D.(2,3), Giannakopoulou, T.(1), Papailias, I.(1), Trapalis, C.(1) * lead presenter
Affiliations (1) Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos", Greece, (2) Institute of Optical Materials and Technologies, Bulgarian Academy of Sciences, Bulgaria, (3) Institute of Solid State Physics, Bulgarian Academy of Sciences, Bulgaria

**16:45** **Material characterization with reference to biocompatibility and microbiology dedicated for anti-microbial finger implant** **O 8.24**

Adam Byrski1, Roman Major1, Marcin Dyner2, Katarzyna Kasperkiewicz3, Łukasz Major1, Juergen M. Lackner4
1. Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Reymonta St. 25, 30-059 Cracow, Poland 2. Faculty of Science and Technology, Jan Dlugosz University in Czestochowa, Armii Krajowej Av, 13/15, 42-200 Czestochowa, Poland 3. University of Silesia in Katowice, Faculty of Natural Sciences, Institute of Biology, Biotechnology and Environmental Protection, Jagiellońska St. 28, 40-032 Katowice, Poland, 4. JOANNEUM RESEARCH Forschungsges.m.b.H., Institute of Surface Technologies and Photonics, Functional Surfaces, Leobner Strasse 94, 8712 Niklasdorf, Austria

**16:45** **Light Activated Inorganic Agents - the next generation of photocatalytic paints** **O 8.25**

Răzvan Bucureșteanu, Viorel Chihaia, Bogdan Cojocaru, Monica Ioniță, Anton Ficai, Lia-Mara Dițu, Grigore Mihăescu
1. Department of Microbiology, Faculty of Biology, University of Bucharest, Intr. Portocalelor no 1-3, 060101, Bucharest, Romania, 2. Institute of Physical Chemistry "Ilie Murgulescu", Romanian Academy, Splaiul Independentei 202, 060021, Bucharest, Romania, 3. Department of Organic Chemistry, Biochemistry & Catalysis, Faculty of Chemistry, University of Bucharest, Bdul Regina Elisabeta 4-12, 030016 Bucharest, Romania, 4. University Politehnica of Bucharest, Faculty of Applied Chemistry and Materials Science, Bucharest, Romania 5. University Politehnica of Bucharest, Faculty of Applied Chemistry and Materials Science, Department of Science and Engineering of Oxide Materials and Nanomaterials, anton.ficai@upb.ro 6. Department of Microbiology, Faculty of Biology, University of Bucharest, Intr. Portocalelor no 1-3, 060101, Bucharest, Romania 7. Department of Microbiology, Faculty of Biology, University of Bucharest, Intr. Portocalelor no 1-3, 060101, Bucharest, Romania

**16:45** **A study of volatile organic compounds removal using porous silicon decorated with Pulsed-Laser-Deposited PbS nanoparticles** **O 8.26**

Anouar Hajjaji1*, Ameni Rebhi1, Mabrouk Laabidi1, Mounir Gaidi4, Aymen Amine Assadi3, Brahim Bessais1, and My Ali ElKhakani2
1 Laboratoire de Photovoltaïque, Centre de Recherches et des Technologies de l'Energie, Technopôle de Borj-Cédria, BP 95 Hammam-Lif, 2050 Tunis, Tunisie 2Centre Énergie Matériaux et Télécommunications (INRS-EMT), Institut National de la Recherche Scientifique (INRS), 1650 Boulevard Lionel Boulet, Varennes, QC J3X 1S2, Canada 3 Univ Rennes, ENSCR, ISCR (Institut des Sciences Chimiques de Rennes), UMR 6226, F-35000, Rennes, France 4Center of Advanced Research Materials, Research Institute of Sciences and Engineering, University of Sharjah, Sharjah P.O. Box 27272, United Arab Emirates

**16:45** **Marine-derived hydroxyapatite coatings synthesized by Pulsed laser deposition** **O 8.27**

L. Duta1, G.E Stan2, V. Grumezescu1, G. Dorcioman1, E. Matei2, I. Zgura2, O. Gherasim1,3, G. Popescu-Pelin1, F.N. Oktar4,5
1National Institute for Lasers, Plasma and Radiation Physics, Lasers Department, Magurele, Romania 2National Institute of Materials Physics, Magurele, Romania 3Department of Science and Engineering of Oxide Materials and Nanomaterials, Faculty of Applied Chemistry and Materials Science, Politehnica University of Bucharest, Bucharest, Romania 4Department of Bioengineering, Faculty of Engineering, University of Marmara, Istanbul, Turkey 5Advanced Nanomaterials Research Laboratory (ANRL), University of Marmara, Istanbul, Turkey

**16:45** **Anti-melanoma activity of Doxorubicin loaded superparamagnetic iron oxide nanoparticles** **O 8.28**

JINGA L-.I. (1,3), POPESCU-PELIN, G. (1), IONITA, P. (3), ANTOHE, I., (1) ICRIVERZI, M. (2), KUNCSER, V. (4), IACOB, N. (4), KUNCSER, A. (4), SIMA, L. E. (2), SOCOL, G. (1).
(1) National Institute for Lasers, Plasma and Radiation Physics, Romania (2) Institute of Biochemistry of the Romanian Academy, Romania (3) Faculty of Chemistry, University of Bucharest, Romania (4) National Institute of Materials Physics, Romania

**16:45** **Hydroxyapatite of various biological origin: from powders to thin film cytocompatibility assessment** **O 8.29**

L. Duta1, V. Grumezescu1, M.C. Chifiriuc2,3, G.E Stan4, O. Gherasim1,5, I. Zgura4, F.N. Oktar6,7
1Lasers Department, National Institute for Lasers, Plasma and Radiation Physics, Magurele, Romania 2Department of Microbiology, Faculty of Biology, University of Bucharest, Bucharest, Romania 3Research Institute of the University of Bucharest (ICUB), Earth, Environmental and Life Sciences Division, Bucharest, Romania 4National Institute of Materials Physics, Magurele, Romania 5Department of Science and Engineering of Oxide Materials and Nanomaterials, Faculty of Applied Chemistry and Materials Science, Politehnica University of Bucharest, Bucharest, Romania 6Department of Bioengineering, Faculty of Engineering, University of Marmara, Istanbul, Turkey 7Advanced Nanomaterials Research Laboratory (ANRL), University of Marmara, Istanbul, Turkey

**16:45** **Visible-light photocatalytic activity of atomic layer deposited TiO2 inverse opals films doped with preformed Au nanoparticles** **O 8.30**

P. BIRNAL (a), C. MARCO DE LUCAS (a), I. POCHARD (b), F. HERBST (a), O. HEINTZ (a), L. SAVIOT (a), B. DOMENICHINI (a), L. IMHOFF (a)
(a) Laboratoire Interdisciplinaire Carnot de Bourgogne (ICB), UMR 6303 CNRS-Université Bourgogne-Franche Comté, 9 Av. A. Savary, BP 47 870, F-21078 DIJON Cedex, FRANCE (b) Laboratoire UTINAM, UMR 6213 CNRS-Université Bourgogne-Franche-Comté, Besançon, France

**16:45** **Block Copolymer Assisted Fabrication of Gallium Nanofilms for Orthopaedic Implant Coatings.** **O 8.31**

Murphy, Bríd*(1)(2), Crowley, Tim (3) & Morris, Michael. A (1)(2)
(1)AMBER Research Centre, CRANN Institute, Trinity College Dublin, Dublin 2, Ireland, (2)School of Chemistry, Trinity College Dublin, Dublin 2, Ireland, (3)DePuy Synthes (Ireland), Loughbeg, Ringaskiddy, Co. Cork, Ireland, *lead presenter

**16:45** **An in vitro evaluation of cerium-containing bioactive glass on metal implant coatings** **O 8.32**

S.R. Gavinho1, I. Hammami1, A. Sofia Pádua2, J.C. Silva2, J.P. Borges2, I. Sá-Nogueira3, M.P.F. Graça1
1 I3N and Physics Department, Aveiro University, Aveiro, Portugal 2 I3N- CENIMAT, New University of Lisbon, Lisbon, Portugal 3 UCIBIO, REQUIMTE, Departamento Ciências da Vida, FCT-UNL, Lisbon, Portugal

**16:45** **Bioactive coatings based on hydroxyapatite for improved implantable devices** **O 8.33**

Grumezescu, V.(1), Duță, L.(1), Gherasim, O.(1), Holban, A.M.(2), Grumezescu, A.M.(3), Ficai, A.(3), Hudiță, A.(4)
(1)Lasers Department, National Institute for Lasers, Plasma and Radiation Physics, 077125 Magurele, Romania, (2)Department of Microbiology and Immunology, Faculty of Biology, University of Bucharest, 077206 Bucharest, Romania (3) Department of Science and Engineering of Oxide Materials and Nanomaterials, Faculty of Applied Chemistry and Materials Science, Politehnica University of Bucharest, 011061 Bucharest, Romania, (4)Department of Biochemistry and Molecular Biology, Faculty of Biology, University of Bucharest, 050095 Bucharest, Romania,

**16:45** **The development of new magnetic bio-nanomaterials based on plant virus for biomedical applications** **O 8.34**

Sendos Darwish
Souad Ammar, Nguyêt-Thanh HA DUONG



**16:45** **Core/shell nanosystem for modulation of microbial biofilm formation on G-tube surfaces** **O 8.35**

Grumezescu, V.(1), Hudiță, A.(2), Gherasim, O.(1), Negut, I.(1), Dorcioman, G.(1), Grumezescu, A.M.(3), Ditu, L.M.(4), Holban, A.M.(4)
(1)Lasers Department, National Institute for Lasers, Plasma and Radiation Physics, 077125 Magurele, Romania (2)Department of Biochemistry and Molecular Biology, Faculty of Biology, University of Bucharest, 050095 Bucharest, Romania (3) Department of Science and Engineering of Oxide Materials and Nanomaterials, Faculty of Applied Chemistry and Materials Science, Politehnica University of Bucharest, 011061 Bucharest, Romania (4)Department of Microbiology and Immunology, Faculty of Biology, University of Bucharest, 077206 Bucharest, Romania

**16:45** **Out Of Plane Metal Coordination for a True Solvent Free Building with Molecular Bricks** **O 8.36**

Alberto Calloni, Alessio Orbelli Biroli, Alberto Bossi, Madan S. Jagadeesh, Guglielmo Albani, Lamberto Duò, Franco Ciccacci, Andrea Goldoni, Alberto Verdini, Luca Schio, Luca Floreano, Gianlorenzo Bussetti
A.C., M.S.J., G.A., L.D., F.C. and G.B. - Department of Physics, Politecnico di Milano (Italy), p.za Leonardo da Vinci 32, 20133 Milano (Italy), A.O-B. - Department of Chemistry, Università di Pavia, via Taramelli 12, 27100 Pavia (Italy), A.B. - Istituto di Scienze e Tecnologie Chimiche ?G. Natta? del Consiglio Nazionale delle Ricerche (CNR-SCITEC), via Golgi 19, 20133 Milano (Italy), A.G. - Elettra Sincrotrone Trieste, s.s. 14 km 163.5, 34149 Trieste (Italy), A.V., L.S. and L.F. - Istituto Officina dei Materiali ? CNR-IOM, Laboratorio TASC, s.s. 14 km 163.5, 34149 Trieste (Italy)

**16:45** **Synthesis and laser modification of WTe2-xSex via reduction and tellurization/selenization of WOy grown by sol-gel** **O 8.37**

A. Fernandez Garcia (1)*, M. Garcia-Lechuga (1,2), V. Torres Costa (1), O de Melo Pereira (1,3), F. Agullo-Rueda (4) & M. Manso Silvan (1,2)
(1)Departamento de Fisica Aplicada, Universidad Autonoma de Madrid, 28049, Madrid, Spain, (2)Centro de Microanalisis de Materiales, Universidad Autonoma de Madrid, 28049, Madrid, Spain, (3)Departamento de Fisica, Universidad de La Habana, (4)Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Cientificas (ICMM-CSIC), 28049, Madrid, Spain, *lead presenter

**16:45** **Ab-initio study of the formation of silicide interface, low (W/MO) VS High (Ag/Cu) adatom mobylity** **O 8.38**

Vernet B. (1,2), Nita F. (1,3), Michel A. (1), Abadias G. (1), Mastail C. * (1)
(1) Institut P' Département Physique et Mécanique des Matériaux, UPR 3346, CNRS-Université de Poitiers-ENSMA, TSA 41123, 86073 Poitiers cedex 9, France
(2) Laboratoire des Sciences pour l'Environnement et l'Energie, Département Physique, ENS-Université d'Etat d'Haïti, HT6115 Canapé-Vert, Port-au-Prince, Haïti
(3) National Institute for Research and Development in Microtechnologies, 126A Erou Iancu Nicolae, Voluntari Town, Ilfov County 077190, Romania

## Thursday june 2

### Fundamental aspects of thin film growth : Nikolaos KALFAGIANNIS

**09:00** INV **Design of weakly interacting heterostructures via selective surfactant deployment** — O 9.1
Andreas Jamnig1, Nikolaos Pliatsikas2, Gregory Abadias1, and Kostas Sarakinos3
1Institut Pprime, Département Physique et Mécanique des Matériaux, UPR 3346 CNRS, Université de Poitiers, ENSMA, 11 Boulevard Marie et Pierre Curie, TSA 41123, F86073 Poitiers Cedex 9, France 2Department of Physics, Aristotle University of Thessaloniki, GR-54124 Thessaloniki, Greece 3Department of Physics, University of Helsinki, P.O. Box 43, FI-00014, Helsinki, Finland

**09:30** **Effect of the temperature substrate on the properties of a new ternary nitride semiconductor with a wide bandgap energy: MgSnN2** — O 9.2
A. Virfeu, F. Alnjiman, S. Diliberto, J. Ghanbaja, E. Haye, S. Migot, J.F. Pierson
A. Virfeu, F. Alnjiman, S. Diliberto, J. Ghanbaja, S. Migot, J.F. Pierson, Institut Jean Lamour (UMR CNRS 7198), Université de Lorraine, Nancy, France F. Alnjiman, Department of Physics and Astronomy at College of Science, King Saud University at Riyadh, Saudi Arabia E. Haye, Laboratoire d'Analyse par Réactions Nucléaires (LARN), Namur Institute of Structured Matter (NISM), University of Namur, 5000 Namur, Belgium

**09:45** **Coarse-grained approach in growth simulations of metal oxides and polymers on planar and nanostructured substrates** — O 9.3
Jorge Budagosky, Xabier García-Casas, Juan R. Sánchez-Valencia, Ángel Barranco, Ana Borrás
Nanotechnology on Surfaces and Plasma Group, Materials Science Institute of Seville (CSIC-US), C/Américo Vespucio 49, Seville 41092, Spain.

**10:00** **Study of Crystallization of Amorphous Metals through Molecular Dynamics Simulations** — O 9.4
P. Dwivedi 1, A. Fraile 2, T. Polcar 1
1 Department of Control Engineering, Faculty of Electrical Engineering, Czech Technical University in Prague, Karlovo náměstí 13, 121 35, Czech Republic. 2 Nuclear Futures Institute, Bangor University, Gwynedd, LL57 2DG, United Kingdom.

**10:15** **Atomistic study of early growth stages of Cu thin film growth by Kinetic Monte Carlo simulations** — O 9.5
Nita, F.*(1,2), Furgeaud, C.(1), Michel, A.(1), Abadias, G.(1), Mastail, C.(1)
(1) Institut P' Département Physique et Mécanique des Matériaux, UPR 3346, CNRS-Université de Poitiers-ENSMA, TSA 41123, 86073 Poitiers cedex 9, France
(2) National Institute for Research and Development in Microtechnologies, 126A Erou Iancu Nicolae, Voluntari Town, Ilfov County 077190, Romania

**10:30** **Discussion**

**10:45**

**11:00** **Self-assembly of bis-salphen metal-organic polymer networks: atomistic simulation of assembly and deformation processes** — O 9.6
Sergey Pyrlin, Marta Ramos
Center of Physics of the Universities of Minho and Porto

**11:15** **Deposition and study of the superhydrophilic diamond-like carbon films** — O 9.7
Š. Meškinis, A. Vasiliauskas, V. Kopustinskas, B. Abakevičienė, A. Guobienė
Institute of Materials Science of Kaunas University of Technology, K. Baršausko 59, Kaunas, Lithuania

**11:30** **From tensile to compressive stress in Cu/W multilayers: impact on thermal conductivity and microstructure** — O 9.8
Giacomo Lorenzin (1), Md Shafkat Bin Hoque (2), Daniel Ariosa (3), Patrick E. Hopkins (2), (4), (5), Eric R. Houglund (4), John A. Tomko (2), Sean W. King (6), Lars P.H. Jeurgens (1) and Claudia Cancellieri (1)
(1) Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for Joining Technologies and Corrosion, Überlandstrasse 129, 8600 Dübendorf, Switzerland. (2) Department of Mechanical and Aerospace Engineering, University of Virginia, Charlottesville, VA, 22904, USA. (3) Instituto de Física, Facultad de Ingeniería, Universidad de la República, Herrera y Reissig 565, C.C. 30, Montevideo 11000, Uruguay. (4) Department of Materials Science and Engineering, University of Virginia, Charlottesville, Virginia 22904, USA. (5) Department of Physics, University of Virginia, Charlottesville, Virginia 22904, USA. (6) Logic Technology Development, Intel Corporation, Hillsboro, Oregon 97124, United States.



**11:45** **Structural and magnetic properties of MBE grown Co2FeSi/Si(111) films** — O 9.9
I. Azaceta, S.A. Cavill and V.K. Lazarov
Department of Physics and Astronomy, University of York, Heslington, York, YO10 5DD, UK

**12:00** **Discussion**

### Thin film growth and applications : Kostas SARAKINOS

**15:00** **Elaboration of Bi-based Nanoparticles by reactive magnetron sputtering on Ionic Liquid for photocatalytic applications** — O 10.1
Vitalios Ntomprougkidis*(1), Jean-Michel Andanson(1), Pierre Bonnet(1), Angélique Bousquet(1)
(1) Institute of Chemistry of Clermont-Ferrand (ICCF), University Clermont Auvergne, France

**15:15** **Photocatalytic properties of thin film TiO2 deposited by HiPIMS** — O 10.2
Daniel F. Fernandes, Lars Österlund, Tomas Kubart
Daniel F. Fernandes, Tomas Kubart: Division of Solid State Electronics, Department of Electrical Engineering, Ångström Laboratory, Uppsala University, P.O. Box 65, 751 03, Uppsala, Sweden. Email (D.F. Fernandes): daniel.f.fernandes@angstrom.uu.se Email (T. Kubart): tomas.kubart@angstrom.uu.se Lars Österlund: Department of Materials Science and Engineering, Ångström Laboratory, Uppsala University, P.O. Box 534, SE-751 21 Uppsala, Sweden E-mail: lars.osterlund@angstrom.uu.se

**15:30** **Pd and Rh atomic layer deposition by using ozone as the only co-reactant** — O 10.3
Yiming Zou, Yuanyuan Guo, Chunyu Cheng, Ronn Goei, Alfred Ing Yoong Tok
School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798

**15:45** **Characterization of galvanic silver dispersion coatings with optimized electrical and tribological behavior** — O 10.4
Kayla Johnson, Robin Arnet, Dr. Ann-Kathrin Egetenmeyer
Research Institute for Precious Metals and Metals Chemistry

**16:00** **Low temperature deposition of crystalline V2O3 thin films by high power impulse magnetron sputtering** — O 10.5
Wahyu Diyatmika1, Martin Rudolph1, Gargi Kodgirwar1,2, Yeliz Unutulmazsoy1, and André Anders1,3
1 Leibniz Institute of Surface Engineering (IOM), Permoserstraße 15, 04318 Leipzig, Germany, 2 Faculty of Physics and Earth Science, Leipzig University, Linnéstraße 5, 04103 Leipzig, Germany, 3 Felix Bloch Institute of Solid State Physics, Leipzig University, Linnéstraße 5, 04103 Leipzig, Germany

**16:15** **Discussion**

**16:30**

**16:45** **Bi-phasic calcium phosphate coatings of natural origin synthesized by pulsed laser deposition** — O 10.6
G. Popescu-Pelin1, C. Ristoscu1, L. Duta1, G.E. Stan2, M. Popa3,4, M.C. Chifiriuc3,4, F.N. Oktar5,6, and I.N. Mihailescu1
1National Institute for Lasers, Plasma and Radiation Physics, Magurele 077125, Romania 2National Institute of Materials Physics, Magurele 077125, Romania 3Microbiology Department, Faculty of Biology, University of Bucharest, Bucharest 060101, Romania 4Research Institute of the University of Bucharest (ICUB), University of Bucharest, Bucharest 050095, Romania 5Department of Bioengineering, Faculty of Engineering, University of Marmara, Kadikoy 34722, Istanbul, Turkey 6Center for Nanotechnology & Biomaterials Research, University of Marmara, Kadikoy 34722, Istanbul, Turkey

**17:00** **Micro/nanostructured piezoelectric α-quartz thin films on silicon** — O 10.7
David Sánchez-Fuentes* (1), Q. Zhang (1), C. Jolly (1), R. Desgarceaux (1), A. Gomez (2), M. Gich, (2) A.Carretero-Genevrier. (1)
(1) Institut d'Electronique et des Systemes (IES), CNRS, Université de Montpellier, 860 Rue de Saint Priest 34095 Montpellier, France (2) Institut de Ciència de Materials de Barcelona ICMAB, Consejo Superior de Investigaciones Científicas CSIC, Campus UAB 08193 Bellaterra, Catalonia, Spain * lead presenter

**17:15** **A multifunctional Copper-doped 45S5 Bioglass for dental implants: Synthesis and physical-biological characterization** **O 10.8**

Imen. Hammami1, Sílvia R. Gavinho1, Manuel. P. F. Graça1, Ana S. Pádua2, Diogo J. Ramos2, Isabel Sá-Nogueira3, Jorge C. Silva2, Joao P. Borges2
1I3N and Physics Department, Aveiro University, Aveiro, Portugal, 2 I3N-CENIMAT, New University of Lisbon, Lisbon, Portugal, 3 UCIBIO, REQUIMTE, Departamento Ciências da Vida, Faculdade de Ciências e Tecnologia, FCT-UNL, Lisbon, Portugal

**17:30** **Plasma Deposition of Boron Phosphide at Low temperature** **O 10.9**

Maksimova, A.A.(1,2),Uvarov, A.V.(1), Baranov, A.I.(1), Gudovskikh, A.S.(1,2), Vyacheslavova, E.A.(1), Kirilenko, D.A.(3), Kleider, J.-P.(4,5)
(1) Alferov University (St. Petersburg Academic University), Khlopina str., 8k3, St. Petersburg, 194021, Russia, (2) Saint-Petersburg Electrotechnical University "LETI", Prof. Popov str., 5, St. Petersburg, 197376, Russia, (3) Ioffe Physical-Technical Institute of the Russian Academy of Sciences, Politekhnicheskaya st., 26, 194021, St. Petersburg, Russia, (4) Université Paris-Saclay, CentraleSupélec, CNRS, Laboratoire de Génie Electrique et Electronique de Paris, F-91192, Gif-sur-Yvette, France, (5) Sorbonne Université, CNRS, Laboratoire de Génie Electrique et Electronique de Paris, F-75252, Paris, France

**17:45** **Conformal growth of GaP on the Si nanowires surface via plasma-enhanced atomic layer deposition** **O 10.10**

Uvarov, A.V.*(1,2), Gudovskikh, A.S.(1,2), Vyacheslavova, E.A.(1,2), Morozov, I.A.(1), Kirilenko, D.A.(3), Maksimova, A.A.(1,2), Baranov, A.I.(1,2)
(1) St. Petersburg National Research Academic University RAS St. Petersburg, Russia, (2) St. Petersburg Electrotechnical University "LETI", St. Petersburg, Russia, (3) Ioffe Physical-Technical Institute RAS, St. Petersburg, Russia,

**18:00** **Discussion**



**Friday june 3**

**Thin film materials for advanced energy : Jiri HOUSKA**

**09:00** INV **Nano-engineered crystalline silicon materials via low temperature plasma processes** **O 11.1**

Pere Roca i Cabarrocas
LPICM, CNRS, Ecole Polytechnique, Institut Polytechnique de Paris, 91120 Palaiseau, France

**09:30** **Nanometric a-Si:H/oxide Solar Cells for Transparent Photovoltaics** **O 11.2**

Alex J. Lopez-Garcia, Cristobal Voz, Joaquim Puigdollers, Víctor Izquierdo-Roca, Alejandro Pérez-Rodríguez
Institut de Recerca en Energia de Catalunya (IREC), Sant Adrià del Besòs, Barcelona, Spain, Departament Enginyeria Electrònica, Universitat Politècnica de Catalunya, 08034, Barcelona, Spain, Departament Enginyeria Electrònica, Universitat Politècnica de Catalunya, 08034, Barcelona, Spain,Institut de Recerca en Energia de Catalunya (IREC), Sant Adrià del Besòs, Barcelona, Spain, Institut de Recerca en Energia de Catalunya (IREC), Sant Adrià del Besòs, Barcelona, Spain. IN2UB, Departament d'Enginyeria Electrònica i Biomédica, Universitat de Barcelona, Barcelona, Spain

**09:45** **Study of the synthesis of Al2O3-Ag cermets by reactive magnetron co-sputtering for photothermal applications** **O 11.3**

Adrien Chauvin,1-2 François Reniers,1 Rony Snyders2-3
1 Chemistry of Surfaces, Interfaces and Nanomaterials, Faculty of Sciences, Université libre de Bruxelles, 50 Avenue F.D. Roosevelt, 1050 Brussels, Belgium, 2 Chemistry of Plasma-Surface Interactions, University of Mons, 23 Place du Parc, 7000 Mons, Belgium, 3 Materia Nova Research Center, 3 Avenue Nicolas Copernic, 7000 Mons, Belgium

**10:00** **Passivation of porous Si using reactive magnetron sputtered TiN coating for high-performance supercapacitors** **O 11.4**

Deepika Jhajhria, Ramesh Chandra
Nanoscience Laboratory, Institute Instrumentation Centre, Indian Institute of Technology Roorkee, Roorkee, 247667, India

**10:15** **Design, plasma deposition and optical performance of absorbers based on W/W-SiCH/TaON multinanolayers for CSP** **O 11.5**

A. Diop* (1,2), D. Ngoue(1,2), A. Bousquet(3), B. Diallo(4), A. Grosjean (1,2), H. Glenat(1), S. Quoizola(1,2), A. Goullet(5), T. Sauvage(4), A. Soum-Glaude(1), E. Tomasella(3), L. Thomas(1,2)
(1) PROMES-CNRS (Laboratory of PROcess, Materials, Solar Energy)-Perpignan/ Font-Romeu- Odeillo-Via, France (2) Université de Perpignan, Perpignan, France (3) ICCF (Institut de Chimie de Clermont-Ferrand), Aubière, France (4) CEMHTI (Conditions Extrêmes et Matériaux), Orléans, France (5) IMN (Institut des Matériaux Jean Rouxel), Nantes, France

**10:30** **Discussion**

**10:45**

**11:00** **Improved Electrochemical Conversion of CO2 to Multicarbon Products by Using Molecular Doping** **O 11.6**

Huali Wu1, Kun Qi1, Luc Lajaunie2,3, Philippe Miele1,4, Damien Voiry1*
1 Institut Européen des Membranes, IEM, UMR 5635, Université Montpellier, ENSCM, CNRS, Montpellier 34000, France, 2 Departamento de Ciencia de los Materiales e Ingeniería Metalúrgica y Química Inorgánica, Facultad de Ciencias, Universidad de Cádiz, Campus Río San Pedro S/N, Puerto Real, 11510, Cádiz, Spain, 3 Instituto Universitario de Investigación de Microscopía Electrónica y Materiales (IMEYMAT), Facultad de Ciencias, Universidad de Cádiz, Campus Río San Pedro S/N, Puerto Real 11510, Cádiz, Spain, 4 Institut Universitaire de France (IUF), 1 rue Descartes, 75231 Paris Cedex 05,

**11:15** **Magnetron Sputtered Cr and Diamond Based Carbon as Protective Double Layer Coating for Accident Tolerant Nuclear Fuel Tubes** **O 11.7**

Irena Kratochvílová*1, Lucie Celbová 2, Petr Ashcheulov1, Jiří Bulíř1, Jaromír Kopeček1, Kateřina Aubrechtová Dragounová1,2 Jakub Luštinec1,2, Jan Macák3 Petr Sajdl3 and Radek Škoda4
1FZU – Institute of Physics of the Czech Academy of Sciences, Na Slovance 1999/2, 182 21, Prague 8, Czech Republic, 2Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Brehova 7, 115 19 Prague, Czech Republic, 3University of Chemistry and Technology, Power Engineering Department, Technická 3, Prague 6, CZ-166 28, Czech Republic, 4Czech Technical University in Prague, Czech Institute of Informatics, Robotics and Cybernetics, Jugoslávských partyzánů 1580/3, Prague 6, CZ-160 00, Czech Republic,

**11:30** **Ne and Al ion implantation effects on the microstructure, thermal and electrical properties of CrSi2 thin films** **O 11.8**

M. Timm1,2,3, E. Oliviero2,3, W. Sun4, S. Gomes4, G. Hamaoui5, P. F. P. Fichtner6, N. Fréty2
1 Instituto de Física, Universidade Federal Do Rio Grande Do Sul, Porto Alegre, RS, Brazil 2 ICGM, CNRS, Univ. Montpellier, Montpellier, France 3 MEA, CNRS, Univ. Montpellier, Montpellier, France 4 CNRS, INSA Lyon, CETHIL, Univ Lyon, UMR5008, 69621 Villeurbanne, France 5 ESYCOM Laboratory, CNRS, Université Gustave Eiffel, 77454 Marne-la-Vallée, France 6 Escola de Engenharia, Universidade Federal Do Rio Grande Do Sul, Porto Alegre, RS, Brazil

**11:45** **Formation of Phosphorus-Doped N-type Silicon Films Using Sputter Epitaxy Method** **O 11.9**

Hiroya Esaki* (1), Nobumitsu Hirose (2), Akifumi Kasamatsu (2), Toshiaki Matsui (2), Yoshiyuki Suda (3) and Takahiro Tsukamoto (1)
(1)The University of Electro-Communications, Japan (2)National Institute of Information and Communications Technology, Japan (3)Tokyo University of Agriculture and Technology, Japan

**12:00** **Discussion and Closing**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM P

## Cultural heritage at risk - perspectives on technologies, materials, modelling and digitalization

*Symposium Organizers :*

Anne BOUQUILLON, C2RMF

Giuseppina PADELETTI, CNR - Consiglio Nazionale delle Ricerche, ISMN—Instituto per lo Studio dei Materiali Nanostrutturati

João Pedro VEIGA, Universidade Nova de Lisboa

## Wednesday june 1

**08:45** **Provisional programme - may be subjected to changes**

**08:50** **Opening - G. Padeletti**

**09:00** INV **Internal structure observation of a detached fresco painting** **P I1.1**
Kaori FUKUNAGA
National Institute of Information and Communications Technology

**09:30** **Structural - J.P. Veiga**

**09:30** **Comparative study of architectural bricks from Khorsabad and Susa: characterization and synthesis of black glazes** **P O1.1**
E. Beauvoit (1, 2), O. Majérus (2), D. Caurant (2), G. Wallez (2), J. Cuny (3), A. Thomas (3), A. Bouquillon (1) (1) Centre de Recherche et de Restauration des Musées de France (C2RMF), Palais du Louvre, 14 quai François Mitterrand, 75001 Paris, FRANCE , (2) Chimie ParisTech, CNRS, Institut de Recherche de Chimie Paris (IRCP), PSL Research University, 75005 Paris, FRANCE , (3) Musée du Louvre, Département des Antiquités Orientales, 75001 Paris, FRANCE

**09:45** **The degradation of concrete used by Sir Arthur Evans in the reconstruction of the Palace of Knossos** **P O2.2**
Giuseppina Padeletti1*, Giampiero Montesperelli2, Sara Ronca3, Antonella Curulli1 Francesca Romana Lamastra2, João Pedro Veiga4, Fernanda Carvalho4, Hugo Águas4, Nicola Cavalagli5, Filippo Ubertini5, Elissavet Kavoulaki6
1. CNR Consiglio Nazionale delle Ricerche, ISMN – Istituto per lo Studio dei Materiali Nanostrutturati, Via Salaria km 29.5, 00015 Monterotondo, Roma, Italy 2. Dipartimento di Ingegneria dell'Impresa, Università di Roma Tor Vergata, INSTM - Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali, via della Ricerca Scientifica, 00133 Rome, Italy 3. Dipartimento di Scienze della Terra, La Sapienza Università di Roma, P.le Aldo Moro 5, 00185 Rome, Italy 4. CENIMAT/ I3N Centro de Investigação em Materiais, UNINOVA – Instituto de Desenvolvimento de Novas Tecnologias, Departamento de Ciência dos Materiais, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 2829-516 Caparica, Portugal 5. Dipartimento di Ingegneria Civile ed Ambientale, Università di Perugia, via G. Duranti 93, 06125, Perugia 6. EPHORATE of Antiquities of Heraklion, Xanthoudidou & 1 Chatzidaki str, Heraklion 71202, Greece. * Corresponding author: giuseppina.padeletti@cnr.it

**10:00** **A Late Iron Age gold earring in the context of Proto-historic gold and silver technologies** **P O3.3**
Serrano S.(1,2), Rodrigues A.(2), Machado A.F.(3), Figueiredo E.(2)
(1) Department of Conservation and Restoration, NOVA School of Science and Technology, Portugal, (2) CENIMAT/i3N, NOVA School of Science and Technology, Portugal, (3) Laboratório José de Figueiredo, Direção Geral do Património Cultural, Portugal.

**10:15** **pH-responsive pHEMA/PAA SIPNs for the capture of copper ions and corrosion removal** **P O4.4**
Teresa Guaragnone, Marta Rossi, David Chelazzi, Rosangela Mastrangelo, Mirko Severi, Emiliano Fratini, Piero Baglioni Department of Chemistry "Ugo Schiff" and CSGI, University of Florence, I-50019 Florence, Italy

**10:30** **Discussion**

**10:45**

**11:00** **Preventive - G. Padeletti**

**11:00** **Ultrashort pulsed laser ablation in conservation: preserving the Sydney Harbour Bridge** **P O5.5**
Julia Brand*(1,2), Andrei Rode(2), Steve Madden(2), Alison Wain(1), Penelope King(3), Ludovic Rapp(2)
(1) Centre for Creative and Cultural Research, Faculty of Art and Design, University of Canberra, Australia (2) Department of Quantum Science and Technology, Research School of Physics, Australian National University, Australia (3) Research School of Earth Sciences, Australian National University, Australia

**11:15** **Ultrafast laser structuring of natural stones for protection applications in Cultural Heritage** **P O6.6**
David M. Freire-Lista(1), Ana J. López(2), Alberto Ramil(2) (1) UTAD Universidade de Trás-os-Montes e Alto Douro. Quinta de Prados. 5001-801 Vila Real, Portugal, (2) Universidade da Coruña, Campus Industrial de Ferrol, Ferrol, 15403, A Coruña, Spain



**11:30** **Predictive Tool Based on Hybrid Modeling for an Optimized Preservation of Cellulose-Acetate Movie Films** **P O7.7**
Abeer Al Mohtar* [1,2], João Lopes [2] and Moisés L. Pinto [1]
(1) CERENA, Departamento de Engenharia Química, Instituto Superior Técnico, Universidade de Lisboa, 1049-001 Lisboa, Portugal. (2) iMed.Ulisboa, Faculdade de Farmácia, Universidade de Lisboa, Av. Prof. Gama Pinto, 1649-003 Lisboa, Portugal.

**11:45** **Cryogels with tailored cleaning abilities to restore Modern and Contemporary Art: the role of phase separation** **P O8.8**
Rosangela Mastrangelo, Claudio Resta, Emiliano Carretti, Emiliano Fratini and Piero Baglioni Center for Colloid and Interface Science, CSGI, and Department of Chemistry, Università degli Studi di Firenze, Via della Lastruccia 3, 50019 – Sesto Fiorentino (FI), Italy

**12:00** **Single sensor-based electronic nose for preventive conservation of cultural heritage** **P O9.9**
Guillem Domènech-Gil (1), Jens Eriksson (1), Robert Brooke (2), Valerio Beni (2), Donatella Puglisi (1)
(1) Sensor and Actuator Systems, Linköping University, Sweden (2) RISE Research Institutes of Sweden, Norrköping, Sweden

**12:15** **Environmentally friendly ZnO/Castor oil polyurethane composites for the gas-phase adsorption of acetic acid** **P O18.18**
Alessio Zuliani, Damiano Bandelli, David Chelazzi, Rodorico Giorgi, Piero Baglioni Department of Chemistry «Ugo Schiff» and CSGI, University of Florence, Via della Lastruccia 3, 50019 Sesto Fiorentino, Florence, Italy

**12:30** **Discussion**

**12:45** **Lunch**

**15:00** **Welcome Afternoon - J.P. Veiga**

**15:00** INV **The Heritage BAG at the ESRF: a new collaborative access modality for the structural analysis of historical materials** **P I2.2**
V. Gonzalez1*, M. Cotte2,3*, F. Vanmeert4,5, L. Monico4,6,7, C. Dejoie2, M. Burghammer2, Wout de Nolf2, Loïc Huder2
1 Université Paris-Saclay, ENS Paris-Saclay, CNRS, PPSM, 91190, Gif-sur-Yvette, France 2 ESRF, the European Synchrotron Radiation Facility, Grenoble, France 3 L.A.M.S., CNRS UMR 8220, Sorbonne Université, Paris, France 4 AXIS, NANOlab Centre of Excellence, Department of Physics, University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium 5 Royal Institute for Cultural Heritage, Jubelpark 1, 1000 Brussels, Belgium 6 CNR-SCITEC, Via Elce di Sotto 8, 06123 Perugia, Italy 7 Centre of Excellence SMAArt, University of Perugia, Via Elce di Sotto 8, 06123 Perugia, Italy Keywords: synchrotron, X-ray diffraction, BAG, new access modes Correspondence: marine.cotte@esrf.fr

**15:30** **Pigments - G. Padelleti**

**15:30** **Unveiling historical recipes for the production of yellow silver stained glass** **P O10.10**
M. Vilarigues 1,2, A. Ruivo 1,2, S. Louro 2, L.C. Alves3
1 Research Unit VICARTE - Vidro e Cerâmica para as Artes, Campus de Caparica, 2829-516 Caparica, Portugal 2 Department of Conservation and Restoration, Faculdade de Ciências e Tecnologia - Universidade Nova de Lisboa, Campus de Caparica, 2829-516 Caparica, Portugal 3 C2TN, Instituto Superior Técnico, Universidade de Lisboa, E.N.10, 2695-066, Bobadela LRS, Portugal Corresponding author: mgv@fct.unl.pt

**15:45** **Transient absorption study on Red Vermilion darkening in presence of chlorine ions and after UV exposure** **P O11.11**
Francesca Assunta Pisu, Marco Marceddu, Claudio Melis, Pier Carlo Ricci, Carlo Maria Carbonaro, Daniele Chiriu Department of Physics, University of Cagliari Campus of Monserrato, sp n8, km 0.700, Monserrato, Italy - Italy

**16:00** **Pigments and pictural works of Fleury Richard (1777 - 1852): physico-chemical analyses for the study of artistic practices** **P O12.12**
Bensalah-Ledoux, A.(1), Carole, D.*(2), Le Luyer-Urlacher, C.(1), Paccoux, S.(3), Panczer, G.(1), Pillonnet, A.(1) & E. Wicky(4)
(1) Institut Lumière Matière UMR 5306 CNRS - Université Lyon1, Université de Lyon, France (2) Laboratoire des Multimatériaux et Interfaces UMR CNRS 5615, Université Lyon1, Université de Lyon, France (3) Musée des Beaux-Arts de Lyon, France (4) Laboratoire de Recherche Historique Rhône-Alpes UMR CNRS 5190, Université Lyon2, France

**16:15** **Studies on CdS pigment degradation through pump-probe, reflectance, and Raman spectroscopy** **P O13.13**
F. A. Pisu, P. C. Ricci, C. M. Carbonaro, D. Chiriu.
Dept. of Physics University of Cagliari Cittadella Universitaria, S.P. n 8 Km 0.700, 09042 Monserrato CA (Italy)

**16:30** **Modern - A. Bouquillon**

**16:30** **Colloidal Jin Shofu starch hydrogel dispersions as consolidant for modern and contemporary paintings** **P O14.14**
Andrea Casini, David Chelazzi, Rodorico Giorgi
Department of Chemistry «Ugo Schiff» University of Florence, I-50019 Florence, Italy Consorzio Interuniversitario per lo Sviluppo dei Sistemi a Grande Interfase (Center for Colloid and Surface Science), University of Florence, I-50019 Florence, Italy

**16:45** **Into the Molecular Mechanisms of Yellowing: Case Study for Epoxy and Polyurethane** **P O15.15**
Andrey E. Krauklis
Institute for Mechanics of Materials, University of Latvia, Jelgavas Street 3, LV-1004 Riga, Latvia, andykrauklis@gmail.com

**17:00** **Composite colloidal dispersions for the consolidation of historical silk** **P O16.16**
David Chelazzi, Chiara Cianci, Giovanna Poggi, Francesco Modi, Rodorico Giorgi, Marco Laurati
Department of Chemistry "Ugo Schiff" and CSGI, University of Florence, Via della Lastruccia 3, Sesto Fiorentino, 50019, Florence, Italy

**17:15** **Dynamic identification of the tabernacle of the church of Santa Maria Maggiore in Spello, Italy** **P O17.17**
Nicola Cavalagli, Enrique García-Macías, Matteo Castellani, Riccardo Vetturini, Filippo Ubertini
University of Perugia, Perugia, Italy, ETS de Ingeniería de Caminos, Granada, Spain, University of Perugia, Perugia, Italy, Ingenium srl, Foligno, Italy, University of Perugia, Perugia, Italy,

**17:30** **Discussion**

**17:45** **- G. Padeletti, A. Bouquillon, J.P. Veiga**

**17:45** **Virtual sensors for preservation of cultural heritage under humid conditions** **P P1.1**
Guillem Domènech-Gil (1), Donatella Puglisi (1)
(1) Sensor and Actuator Systems, Linköping University, Sweden

**17:45** **Stability of luminescent marking compositions under tropical environments of Southeast Asia** **P P2.2**
I.R. Avetisov1, K.V.Kazmina1, K.I. Runina1, O.B. Petrova1, I.Ch. Avetissov1, Dinh Trung Do2, Thu Trang Ta2, Van Luong Nguyen2
1 Department of Chemistry and Technology of Crystals, D. Mendeleev University of Chemical Technology, MUCTR, Moscow, Russia 2 Vietnam - Russia Tropical Centre, Hanoi, Vietnam

**17:45** **First studies on the 13th Century Ceramic Pavement Mortars from Alcobaça Monastery, a World Heritage site** **P P3.3**
Fernanda Carvalho (1,2*), Ana Nunes (3), Isabel Costeira (4), Ana Pagará (4), Nuno Leal (5), Joaquim Simão (5), Hugo Águas (1,2), Maria Margarida Lima (1,2), João Pedro Veiga (1,6)
(1) CENIMAT/I3N Centro de Investigação de Materiais, NOVA School of Science & Technology FCT NOVA, 2829-516 Caparica, Portugal, (2) Department of Materials Science, NOVA School of Science & Technology FCT NOVA, 2829-516 Caparica, Portugal, (3) DGPC-Direção Geral do Património Cultural, 1349-021 Lisboa, Portugal, (4) Mosteiro de Alcobaça, 2460-218 Alcobaça, Portugal, (5) GEOBIOTEC and Earth Sciences Department, NOVA School of Science & Technology FCT NOVA, 2829-516 Caparica, Portugal, (6) Department of Conservation and Restoration, NOVA School of Science & Technology-FCT NOVA, 2829-516 Caparica, Portugal.

**17:45** **Characterization of mortars from the Roman Aqueduct of Carthage, Tunisia** **P P4.4**
Fernanda Carvalho (1,2), Maria Margarida Lima (1,2), João Pedro Veiga (1,3*)
1. CENIMAT/i3N Centro de Investigação de Materiais, NOVA School of Science & Technology, FCT NOVA, 2829-516 Caparica, Portugal. 2. Department of Materials Science, NOVA School of Science & Technology, FCT NOVA, 2829-516 Caparica, Portugal. 3. Department of Conservation and Restoration, NOVA School of Science & Technology, FCT NOVA, 2829-516 Caparica, Portugal.



**17:45** **Non-destructive characterization of 19th-century pieces: identification of glaze pigments by hyperspectral imaging and PIXE-PIGE** **P P5.5**
E. Beauvoit *(1), Q. Lemasson (2, 3), J.-B. Javel (1), R. Chapoulie (1), A. Ben Amara (1)
(1) IRAMAT-CRP2A, UMR 5060 CNRS, Université Bordeaux Montaigne, Maison de l'Archéologie, Domaine Universitaire, Esplanade des Antilles, 33607 Pessac Cedex, FRANCE , (2) C2RMF, Palais du Louvre, 14 quai François Mitterrand, 75001 Paris, FRANCE , (3) FR3506 New AGLAE, CNRS/Ministère de la Culture, 14 quai François Mitterrand, 75001 Paris, FRANCE

**17:45** **Ceramics from Gharb Al-Ândalus: contributions for the study of interculturality in the medieval Iberian Peninsula** **P P6.6**
Ana S. Saraiva1, 2, 3, Maria José Gonçalves4, Mathilda Larsson Coutinho3, João Pedro Veiga1, 5
1 CENIMAT/i3N, Materials Research Centre, NOVA School of Science and Technology, FCT NOVA, 2829-516 Caparica, Portugal 2 Vidro e Cerâmica para as Artes (VICARTE), NOVA School of Science and Technology, FCT NOVA, 2829-516 Caparica, Portugal 3 HERCULES Laboratory, University of Évora, Largo Marquês de Marialva, 8, 7000 Évora, Portugal 4 Câmara Municipal de Silves (Silves Municipality), Largo do Município,8300-117 Silves, Portugal 5 Department of Conservation and Restoration, NOVA School of Science and Technology, FCT NOVA, 2829-516 Caparica, Portugal Corresponding author: as.saraiva@campus.fct.unl.pt

E-MRS European Materials Research Society

Spring Meeting 2022

May 30 | June 3
Virtual Conference

# SYMPOSIUM Q

## Fundamental and applicative research in laser-material interactions

*Symposium Organizers :*

Alexandra PALLA-PAPAVLU, National Institute for Lasers, Plasma, and Radiation Physics

Anne-Patricia ALLONCLE, Centre National de la Recherche Scientifique LP3 - CNRS

Evgeny GUREVICH, University of Applied Science Munster

Maria KANDYLA, National Hellenic Research Foundation

Selected papers will be published in Applied Phys. A (Springer).

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## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### Pulsed laser deposition and ablation-based growth of materials : Palla-Papavlu Alexandra

**09:00** INV **Thin Films prepared by PLD: model systems for studies using large facilities techniques** **Q I.1**
Thomas Lippert
1- Division for Research with Neutrons and Muons, Paul Scherrer Institute, 5232 Villigen, Switzerland 2- International Institute for Carbon-Neutral Energy Research (WPI-I2CNER), Kyushu University, Fukuoka 819-0395, Japan 3- Laboratory of Inorganic Chemistry, Department of Chemistry and Applied Biosciences, ETH Zu&#776,rich, 8093 Zu&#776,rich, Switzerland

**09:30** **PLD of ferroelectric HfO2 thin films** **Q I.2**
I.A. Bercea1, M. L. Ciurea2 , A.M. Lepadatu2, M. Dragoman3. M. Filipescu1, V. Ion1, A. Moldovan1, V.A. Maraloiu2 , V.S. Teodorescu2, Maria Dinescu1*
1 National Institute for Laser, Plasma and Radiation Physics, Atomistilor 409, 77125 Magurele, Romania 2National Institute of Material Physics, Atomistilor 405 A, 77125 Magurele, Romania 3National Institute for Research and Development in Microtechnologies - IMT, Str. Erou Iancu Nicolae, Nr. 126 A, Voluntari, Ilfov, Romania

**09:45** **Langmuir Probe as Deposition Sensor for Pulsed Laser Deposition: Implementation for copper halide systems** **Q I.3**
Stefan Andrei Irimiciuc(1,2), Sergii Chertopalov(2), Michal Novotný(2), Maricel Agop(3), Valentin Craciun(1,4), Jan Lancok(2)
1National Institute for Laser, Plasma and Radiation Physics – NILPRP, 409 Atomistilor Street, Bucharest, Romania 2Institute of Physics of the Czech Academy of Sciences, Na Slovance 1999/2, Prague, Czech Republic 3Department of Physics, "Gh. Asachi" Technical University of Iasi, 700050 Iasi, Romania 4Extreme Light Infrastructure for Nuclear Physics, IFIN-HH, Magurele, Romania

**10:00** **Study of the bioactivity of glass/polymer biphasic scaffolds obtained by conjugating electrospinning and PLD techniques** **Q I.4**
Curcio, M. *(1), De Bonis, A.(1), Pepe, A.(1), Bochicchio, B.(1), Laezza, A.(1), Teghil, R.(1), Santagata, A. (2), Rau, J.V.(3).
(1) Dipartimento di Scienze, Università della Basilicata, V.le dell'Ateneo Lucano 10, 85100 Potenza, Italy (2) ISM-CNR, UOS Tito Scalo, Zona Industriale, 85050 Tito Scalo (PZ), Italy (3) ISM-CNR, Via del Fosso del Cavaliere, 100-00133 Rome, Italy * lead presenter

**10:15** **Effect of surface characteristics of activated PbS-NPs/TiO2-NTs on the adsorption of Butane-2, 3-dione from indoor air** **Q I.5**
Anouar Hajjaji1*, Safa Jemai1, Mabrouk Laabidi1, Khaled Trabelsi1,Mounir Gaidi4, Aymen Amine Assadi3, Brahim Bessais1, and My Ali ElKhakani2
1 Laboratoire de Photovoltaïque, Centre de Recherches et des Technologies de l'Energie, Technopôle de Borj-Cédria, BP 95 Hammam-Lif, 2050 Tunis, Tunisie 2Centre Énergie Matériaux et Télécommunications (INRS-EMT), Institut National de la Recherche Scientifique (INRS), 1650 Boulevard Lionel Boulet, Varennes, QC J3X 1S2, Canada 3 Univ Rennes, ENSCR, ISCR (Institut des Sciences Chimiques de Rennes), UMR 6226, F-35000, Rennes, France 4Center of Advanced Research Materials, Research Institute of Sciences and Engineering, University of Sharjah, Sharjah P.O. Box 27272, United Arab Emirates

**10:30** **Q&A**

**10:45** **Coffee**

### MAPLE, Nanoparticle Generation and Applications : Evgeny Gurevich

**11:00** **Sensors processed by MAPLE technique for contaminants detection** **Q II.1**
C. Craciun1,2, F. Andrei1,3, A. Bonciu1,2, S. Brajnicov1, M. Filipescu1, A. Palla Papavlu1, M. Dinescu1
1 - National Institute for Lasers, Plasma and Radiation Physics, Magurele, Romania 2 - University of Bucharest, Faculty of Physics, RO 077125 Magurele, Romania 3 - Faculty of Chemistry, University of Bucharest, Romania

**11:15** **Catheters coating through Matrix-Assisted Pulsed Laser Evaporation with new-concept biocompatible graphenic materials** **Q II.2**
M. Alfè, G. Minopoli, V. Gargiulo, U. Caruso, G. Ausanio
Istituto di Scienze e Tecnologie per l'Energia e la Mobilità Sostenibili (CNR-STEMS), 80125 Naples, Italy, Department of Molecular Medicine and Medical Biotechnology, University of Naples Federico II, Naples, Via Pansini, 5, Naples, 80131, Italy, Department of Chemical Sciences, University of Naples Federico II, via Cinthia 4, 80126, Naples, Italy, Department of Physics "E. Pancini" University of Naples Federico II, via Cinthia 4, 80126, 80126 Naples, Italy.



**11:30** **MAPLE deposited organic thin films based on P3HT and PC70BM on nanopatterned substrate** **Q II.3**
M. Socol1, N. Preda1, C. Breazu1, G. Petre1, A. Stanculescu1, A. Stochioiu2, G. Socol2, S. Iftimie3 C. Thanner4, O. Rasoga1
1National Institute of Material Physics, 405A Atomistilor Street, 077125, Magurele, Romania 2National Institute for Lasers, Plasma and Radiation Physics, 409 Atomistilor Street, 077125, Magurele, Romania 3University of Bucharest, Faculty of Physics, 405 Atomistilor Street, P.O. Box MG-11, Magurele, 077125 Romania 4EVGroup., DI Erich Thallner Strasse 1, 4782 St. Florian am Inn, Austria

**11:45** **Flexible bulk heterojunction with non-fullerene acceptor deposited by MAPLE** **Q II.5**
A. Stanculescu(1), M. Socol(1), C. Breazu(1), O. Rasoga(1), G. Petre(1,5), G. Socol(2), G. Popescvu-Pelin(2), N. Preda(1), L. Vacareanu(3), M. Girtan(4), F. Stanculescu(5)
(1) National Institute of Materials Physics, 105 bis Atomistilor Street, P.O. Box MG-7, Bucharest-Magurele, 077125 Romania, sanca@infim.ro, (2)National Institute for Laser, Plasma and Radiation Physics, Str. Atomistilor, Nr. 409, PO Box MG-36, Magurele, Bucharest, 077125, Romania, (3) P. Poni Institute of Macromolecular Chemistry, 41 A Gr. Ghica Voda Alley, 700487-Iasi, Romania, (4)University of Angers, Photonics Laboratory, University 2, Bd. Lavoisier 49045, Angers, France, (5) University of Bucharest, Faculty of Physics, 405 Atomistilor Street, P.O. Box MG-11, Bucharest-Magurele, 077125 Romania

**12:00** **Laser synthesis of MoS2/SWCNT composites** **Q II.6**
Averchenko A.V. * (1), Salimon I.A (1), Zharkova E. V. (1), Abbas O.A. (1), Lagoudakis P. G. (1), Gladush Y. (1), Mkrtchyan A. A. (1), Nasibulin A. G. (1), and Mailis S. (1).
(1) Skolkovo Institute of Science and Technology, Moscow, 121205, Russian Federation

**12:15** **Generation of nanoparticles using a laser treatment of thin films** **Q II.7**
Stankevičius, E* (1), Petrikaitė,V. (1), Trusovas R. (1), Adomavičiūtė-Grabusovė, S (2), Šablinskas, V. (2), Zdaniauskienė, A. (1), Talaikis, M. (1), Mikoliūnaitė, L. (1), Selskis, A. (1), Niaura, G. (1,2)
(1) Center for Physical Sciences and Technology (FTMC), Lithuania, (2) Institute of Chemical Physics, Faculty of Physics, Vilnius University, Lithuania, * lead presenter

**12:30** **Q&A**

**12:45** **Lunch**

### Nanoparticle Generation and Applications : Patricia Alloncle

**14:00** INV **Ferrolectric polymer/metal nanocomposites by laser ablation in liquids** **Q III.1**
Daniel E. Martínez-Tong1, Adriano J. García-Martín2, Tiberio A. Ezquerra3, Aurora Nogales3, Esther Rebollar2 Materials Physics Center (MPC). P. Manuel de Lardizábal 5, 20018 Donostia, Spain, Instituto de Química Física Rocasolano (IQFR-CSIC), Serrano 119, 28006 Madrid, Spain, Instituto de Estructura de la Materia (IEM-CSIC), Serrano 121, 28006 Madrid, Spain

**14:30** **Application of matrix-assisted pulsed laser evaporation for the realization of superhydrophobic polymer surfaces** **Q III.2**
S. Brajnicov, A. Palla-Papavlu, M. Filipescu, V. Satulu, T. Tozar, M. Dinescu
National Institute for Lasers, Plasma, and Radiation Physics, Atomistilor St. 409, Magurele, ZIP 077125, Romania

**14:45** **Palladium-based theranostic nanoplatforms for antitumor applications** **Q III.3**
Scivoletto, G.(1), Bellissima, A.(1), Cucci, L.M.(1), Foti, A.(1), Fraix, A.(2), Petralia, S.(2), Giorgini, E.(3), Notarstefano, V.(3), Marzo, T.(4), La Mendola, D.(4), De Bonis, A.(5), Puglisi, A.(6), Reimhult, E.(6), Satriano, C.*(1).
(1) Department of Chemical Sciences, University of Catania, Italy (2) Department of Drug and Health Sciences, University of Catania, Italy (3) Department of Life and Environmental Sciences, Polytechnic University of Marche, Italy (4) Department of Pharmacy, University of Pisa, Italy (5) Department of Sciences, University of Basilicata, Italy (6) Department of NanoBiotechnology BOKU - University of Natural Resources and Life Sciences, Austria

**15:00** **Hyaluronic acid coated gold nanorods for antitumoral plasmonic photothermal therapy Foti, A.*(1), Domingo, J.(2), Serrano Olmedo, J.J.(2), Ramos, M.(2), Sanfilippo, S.(1), Satriano, C.(1). (1) Department of Chemical Sciences, University of Catania, Italy (2) Centre for Biomedical Technology, Polytechnic University of Madrid (UPM), Spain** **Q III.4**

**15:15** **A FRAP and FRET study of SLB platforms to probe the cell membrane interaction with neurotrophic peptides/nanomaterial hybrids** **Q III.5**
Redigolo, L.(1), Priolo, I.(1), Sanfilippo, V.(1), Forte, G.(2), La Mendola, D.(3), Satriano, C.*(1).
(1) Department of Chemical Sciences, University of Catania, Italy (2) Department of Drug and Health Sciences, University of Catania, Italy (3) Department of Pharmacy, University of Pisa, Italy

**15:30** **Plasmonic tuning of GO-based nanosheets by Ag nanorods for self-cleaning photothermal surfaces to fight surface contamination** **Q III.6**
Tomasella, P.(1), Sanfilippo, V.(1), Foti, A.(1), Fraix, A.(2), Petralia, S.*(2), Forte, G.(2), Fortuna, C.(1), Giuffrida, A.(1), Subbiahdioss, G.(3), Reimhult E.(3), Satriano C.(1).
(1) Department of Chemical Sciences, University of Catania, Italy (2) Department of Drug and Health Sciences, University of Catania, Italy (3) Department of NanoBiotechnology BOKU - University of Natural Resources and Life Sciences, Austria

**15:45** **Q&A**

**: Patricia Alloncle, Palla-Papavlu Alexandra, Evgeny Gurevich, Maria Kandyla**

**16:00** **Influence of laser radiation on the polymer nanofibers generated by electrospinning process** **Q XII.1**
A.Groza1, M.Serbanescu1, B.Bita1, O.Stoican1, I.G.Lupu2, R. M. Zvonaru2, O.Cramariuc3, M.Ganciu3
1National Institute for Laser, Plasma and Radiation Physics, 409 Atomistilor Street, P.O. Box MG 36, Magurele, 077125 Bucharest, Romania 2Department of Textile Products Engineering and Design, Gh. Asachi Technical University Iasi, Iaşi, Romania 3IT Center for Science and Technology, Bucharest, Romania

**16:00** **Morpho-structural changes on iron oxide nanoparticles synthesized by laser pyrolysis and annealed in different environments F. Dumitrache 1, C. Fleaca 1, I. P. Morjan 1, A. Criveanu 1, I. Lungu 1, L. Gavrila-Florescu 1, A. Tiliakos 1,2, A. Marinoiu 2, G. Prodan 3** **Q XII.2**
1. National Institute for Laser, Plasma and Radiation Physics, 409 Atomiştilor Street, Măgurele, , Romania. 2. National R&D Institute for Cryogenic and Isotopic Technologies (ICSI), 4 Uzinei Street, Râmnicu Vâlcea, 240050, Romania 3. “Ovidius” University of Constanta, Constanta, Mamaia Avenue 124, Romania

**16:00** **Synthesis of beryllium nanoparticles via laser ablation** **Q XII.28**
S.A.Yehia1,2, L.Carpen1,2, F. Stokker-Cheregi1, C. Porosnicu1, V.Satulu1, C.Staicu1,2, B.Butoi1, A. Bercea1, A. Palla-Papavlu1, G.Dinescu1,2
1National Institute for Lasers, Plasma and Radiation Physics, 77125, Magurele &#8211, Bucharest, Romania 2Faculty of Physics, University of Bucharest, 77125, Magurele &#8211, Bucharest, Romania

**16:00** **Tungsten oxide based nanocomposites obtained by MAPLE for sensor applications** **Q XII.27**
M. Filipescu*, A. Palla-Papavlu, V. Ion, A. I. Radu, C. Craciun, A. Bonciu, M. Dinescu
National Institute for Lasers, Plasma and Radiation Physics, 077125 Magurele, Romania

**16:00** **Influence of the chirp in the direct-field Electron Acceleration in a Radially Polarized Pulsed beam** **Q XII.3**
Klemensas Laurinavičius, Sergej Orlov
State research institute Center for Physical Sciences and Technology

**16:00** **The formation of Zn and ZnO nanoparticles under the influence of pulsed laser irradiation of the zinc oxide bulk semiconductor** **Q XII.4**
O.V. Kuzyk 1, I.D. Stolyarchuk 1, O.O. Dan’kiv 1, R.M. Peleshchak 1 2, A. Medvids 3
1 - Drohobych Ivan Franko State Pedagogical University, Ukraine, 2 - Lviv Polytechnic National University, Ukraine, 3 - Riga Technical University, Latvia

**16:00** **Evaluating the time constant of p+-n and p+-i-n GaAs junctions with estimating the quantum efficiency of the junctions by photo-** **Q XII.5**
Behnam ZeinalvandFarzin(1), DongKun Lee(2), Geun Hyeng Kim(3), Jaedu Ha(1), Jong Su Kim(1*), Yeongho Kim(4), Sang Jun Lee(4)
(1) Department of Physics, Yeungnam University, Gyeongsan 38541, Republic of Korea,(2) Institute of Photonic & Nano Technology, Department of Physics, Yeungnam University, Gyeongsan 38541, Republic of Korea,(3) Department of Aero Mechanical Engineering, Kyungwoon University, Gumi 13557, Republic of Korea,(4) Division of Interdisciplinary Materials Measurement Institute, Korea Research Institute of Standards and Science, Daejeon 34113, Republic of Korea,* Corresponding author



**16:00** **Kinetic theory of magnetic absorption of ultra-short laser pulses by metal nanoparticles of spheroidal form in conditions in con** **Q XII.6**
O.Yu.Semchuk, O.O.Havryliuk, A.A.Biliuk
O. O. Chuiko Institute of Surface Chemistry, National Academy of Sciences of Ukraine,O. O. Chuiko Institute of Surface Chemistry, National Academy of Sciences of Ukraine, O. O. Chuiko Institute of Surface Chemistry, National Academy of Sciences of Ukraine

**16:00** **Synthesis of Germanium nanoparticles by Pulsed Laser Deposition** **Q XII.29**
F. Stock 1, F. Antoni 1, D. Bouaziz 1, R. Meyer 1, S. Roques 1
1 ICube, D-ESSP, 23 rue du Loess, 67037 Strasbourg - France

**16:00** **LIFT and laser sintering of CuO NP inks: a digital process for low-cost and highly conductive micro-patterns** **Q XII.7**
K. Andritsos a, E. Dimitriou b, M. Makrygianni a, I. Theodorakos a, A. Kaldeli-Kerou c, F. Zacharatos a*, N. Michailidis b and I. Zergioti a.
a. School of Applied Mathematical and Physical Sciences, National Technical University of Athens, Iroon Polytechniou 9, 15780, Athens, Greece b. Physical Metallurgy Laboratory, Department of Mechanical Engineering, School of Engineering, Aristotle University of Thessaloniki, GR 54124 Thessaloniki, Greece c. PLiN Nanotechnology S.A., Spectra Business Center, 57001 Thessaloniki, Greece

**16:00** **Chemical and structural changes at the surface of titanium materials upon irradiation with near-infrared ultrashort laser pulses** **Q XII.8**
F. Mirabella, M. Mezera, M. Weise, M. Sahre, K. Wasmuth, A. Hertwig, J. Krüger, V.-D. Hodoroaba, J. Bonse
Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin, Germany

**16:00** **Substitutional 10% Sn incorporation in Ge by sputter deposition and pulsed laser melting** **Q XII.9**
Enrico Di Russo(1,2,3), Francesco Sgarbossa(1,2), Pierpaolo Ranieri(1), Samba Ndiaye(4), Sébastien Duguay(4), François Vurpillot(4), Lorenzo Rigutti(4), Jean-Luc Rouvière(5), Vittorio Morandi(3), Davide De Salvador(1,2), Enrico Napolitani(1,2,6).
(1) Dipartimento di Fisica e Astronomia, Università degli Studi di Padova, Via Marzolo 8, 35131 Padova, Italy. (2)INFN-LNL, viale dell’Università 2, 35020, Legnaro, Padova, Italy. (3) CNR-IMM, Via Gobetti 101, Bologna, 40129, Italy. (4) Normandie Univ., UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen, France. (5) Univ. Grenoble Alpes, CEA, IRIG-MEM, 38000 Grenoble, France. (6) CNR-IMM, Via S. Sofia 64, 95123 Catania, Italy.

**16:00** **Solvents influence on P(N-Isopropylacrylamide-co-butylacrylate) Coatings obtained by MAPLE** **Q XII.11**
N. Dumitrescu1, A. Bonciu1, A. Moldovan1, V. Dinca1,2 and L. Rusen1 * 1Lasers Department, NILPRP, Magurele, Romania 2FOTOPLASMAT, NILPRP, Magurele, Romania, * laurentiu.rusen@inflpr.ro

**16:00** **Spatially controlled Airy beams for glass processing** **Q XII.12**
Paulius Slevas, Karolis Mundrys, Sergej Orlov, Orestas Ulcinas
Center for Physical Sciences and Technology, Sauletekio Ave. 3, Vilnius, Lithuania, Workshop of Photonics, Mokslininku st. 6A, Vilnius, Lithuania

**16:00** **In vitro evaluation of the effect of textured silicone microtopography characteristics on cells** **Q XII.13**
V. Dinca1,2, S. Nistorescu2, M. Icriverzi3, A. Bonciu1, P. Florian3, N. Dumitrescu2, L. Rusen1, A. Roseanu3
1Lasers department, NILPRP, Magurele, Romania 2FOTOPLASMAT, NILPRP, Magurele, Romania 3 IBAR, Bucharest, Romania

**16:00** **Bioinstructive multifunctional interfaces for implant research** **Q XII.14**
Valentina Dinca FOTOPLASMAT center, National Institute for Laser Plasma and Radiation Physics, Magurele, Romania e-mail: valentina.dinca@inflpr.ro

**16:00** **Ultrahigh precision machining of polymer surface using laser-induced reactive micro-plasmas** **Q XII.15**
Streisel, Leon(1), Ehrhardt, Martin(1,*), Lorenz, Pierre(1), Heinke, Robert(1,2), Hossain, Afaque(1), Zimmer, Klaus(1)
(1) Department of ultra-precision surfaces, Leibniz Institute of Surface Engineering (IOM), Permoserstraße 15, 04318 Leipzig, Germany (2) Institute of Manufacturing Science and Engineering, Technische Universitat Dresden, 01062 Dresden, Germany * corresponding author, Martin.Ehrhardt@iom-leipzig.de Lead presenter: Leon Streisel

**16:00** **Direct laser writing of photonic arrays for vapor-responsive sensing** **Q XII.16**

Jing Qian*(1)§, Colm Delaney(2)§, Xia Zhang(1), Larisa Florea(2), A. Louise Bradley(1). (1)School of Physics and AMBER, Trinity College Dublin, College Green, Dublin 2, Ireland, (2)School of Chemistry and AMBER, the SFI Research Centre for Advanced Materials and BioEngineering Research, Trinity College Dublin, the University of Dublin, College Green, Dublin 2, Ireland.

**16:00** **Modulation of biofilm development in biomimetic hydroxyapatite and natural enamel by cold plasma treatment** **Q XII.17**

**Holban, A.M.*(1,2), Joia, A. (1), Zarif, M. (3), Vizireanu, S. (3), Grumezescu, A.M.(2,4), Birca, A.(4), Farcasiu, A.T. (5), Marinescu, F. (1,2), Chifiriuc, M.C. (1,2) (1)Department of Microbiology and Immunology, Faculty of Biology, University of Bucharest (2)Research Institute of the University of Bucharest, Romania (3) National Institute for Laser, Plasma and Radiation Physics, Magurele, Romania (4)Department of Science and Engineering of Oxide Materials and Nanomaterials, Faculty of Applied Chemistry and Materials Science, University Politehnica of Bucharest (5) Faculty of Dental Medicine, U.M.F. Carol Davila, Bucharest**

**16:00** **Viscoelastic properties of stored red blood cells using single beam optical tweezers** **Q XII.18**

T. Giannakis, M. Kandyla
National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute,

**16:00** **Effect of composition on the MAPLE prepared polymer based organic heterostructures for photovoltaic applications** **Q XII.19**

F. Stanculescu(1), M. Socol(2), C. Breazu(2), G. Socol(3), G. Popescu-Pelin(2), O. Rasoga(2), G. Petre(2,1), N. Preda(2), A. M. Solonaru(4), M. Girtan(5), A. Stanculescu(2)
(1) University of Bucharest, Faculty of Physics, 405 Atomistilor Street, P.O. Box MG-11, Bucharest-Magurele, 077125 Romania (2) National Institute of Materials Physics, 405A Atomistilor Street, P.O. Box MG-7, Bucharest-Magurele, 077125 Romania, sanca@infim.ro (3)National Institute for Laser, Plasma and Radiation Physics, Str. Atomistilor, Nr. 409, PO Box MG-36, Magurele, Bucharest, 077125, Romania (4) P. Poni Institute of Macromolecular Chemistry, 41 A Gr. Ghica Voda Alley, 700487-Iasi, Romania (5)University of Angers, Photonics Laboratory, University 2, Bd. Lavoisier 49045, Angers, France

**16:00** **Investigation of laser-ablated Si phase elements for generation of THz Bessel beams** **Q XII.20**

Paulius Kizevicius, Ernestas Nacius, Rusne Ivaskeviciute-Povilauskiene, Domas Jakubauskis, Linas Minkevicius, Sergej Orlov, Gintaras Valusis, Paulius Slevas
State research institute Center for Physical Sciences and Technology Sauletekio ave 3, LT-10257 Vilnius, Lithuania

**16:00** **Fabrication of ultrathin sensors via laser-forward transfer** **Q XII.21**

A. Bercea, M. Filipescu, S. Brajnicov, A. Palla-Papavlu
National Institute for Lasers, Plasma and Radiation Physics, Lasers Department, Atomistilor Street 409, Magurele, ZIP 077125, Romania

**16:00** **ULTRASHORT LASER ABLATION OF ALUMINIUM NITRIDE AND SILICON NITRIDE CERAMICS** **Q XII.22**

N. Nedyalkov1, Al. Daskalova1, L. Kovachev1,
1Institute of Electronics, Bulgarian Academy of Sciences, 72, Tsarigradsko Shaussee blvd, 1784, Sofia, Bulgaria

**16:00** **Surface structuring of Si3N4 ceramic by nanosecond laser pulses** **Q XII.23**

N. Nedyalkov1*, A. Dikovska1, Ru. Nikov1, Ro. Nikov1, G. Atanasova2, M. Koleva1, L. Aleksandrov2, M. Terakawa3
1Institute of Electronics, Bulgarian Academy of Sciences, 72, Tsarigradsko Chaussee blvd, 1784, Sofia, Bulgaria 2Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, bld. 11, Acad. Georgi Bonchev str, 1113, Sofia, Bulgaria. 3Department of Electronics and Electrical Engineering, Keio University, 3-14-1 Hiyoshi, Kohoku-ku, Yokohama 223-8522, Japan

**16:00** **Nanosecond laser processing of AlN and Si3N4 ceramics in water at different wavelengths** **Q XII.24**

Ro Nikov1, N Nedyalkov1, D Karashanova2
1E. Djakov Institute of Electronics, Bulgarian Academy of Sciences, 72 Tzsarigradsko Chaussee, 1784 Sofia, Bulgaria 2Institute of Optical Materials and Technologies, Bulgarian Academy of Sciences, G. Bonchev Street, bl. 109, Sofia 1113, Bulgaria



**16:00** **High repetition rate laser-induced printing of biopolymers: time-resolved study of multiple jet dynamics** **Q XII.25**

Lucas Duvert 1, Adrien Casanova 1, Jérôme D Robin 2, Frédérique Magdinier 2, Anne-Patricia Alloncle 1 1) Aix-Marseille University, CNRS, LP3 UMR 7341, Campus de Luminy, Case 917, 13288, Marseille cedex 9, France 2) Aix-Marseille University, INSERM, MMG, Marseille Medical Genetics, 13385 Marseille, France

**16:00** **Hybrid composite films based on P3HT:ITIC and ZnO deposited by MAPLE** **Q XII.26**

M. Socol1*, N. Preda1**, A. Costas1, C. Breazu1, G. Petre1,2, A. Stanculescu1, G. Popescu-Pelin3, A. Stochioiu2,3, G. Socol3
1National Institute of Material Physics, 405A Atomistilor Street, 077125, Magurele, Romania 2University of Bucharest, Faculty of Physics, 405 Atomistilor Street, PO Box MG-11, 077125, Magurele, Romania 3National Institute for Lasers, Plasma and Radiation Physics, 409 Atomistilor Street, 077125, Magurele, Romania

**Tuesday may 31**

## LIPSS I : Evgeny Gurevich

**09:00** INV **Bio-inspired Laser Micro- and Nanopatterning of Materials** — Q IV.1
Johannes Heitz, Gerda Buchberger, Cristina Plamadeala, Martina Muck, Werner Baumgartner, Achim Walter Hassel, Dominik Knapic
Institutes of Applied Physics, of Biomedical Mechatronics, and for Chemical Technology of Inorganic Materials, Johannes Kepler University Linz, Austria

**09:30** **LIPSS formation by picosecond laser irradiation of magnetron sputtered gadolinium-doped ceria thin films** — Q IV.2
W. Karim1, A. Petit1, M. Tabbal2, A.L. Thomann1 and N. Semmar1
1 GREMI-UMR 7344-CNRS-University of Orleans, 14 rue d'Issoudun, 45071 Orleans Cedex2, France 2 Department of Physics, American University of Beirut, Beirut, Lebanon 1107 2020.

**09:45** **Reducing Escherichia coli adhesion to PET by modulating spatial periods of laser-induced surface nanoripples** — Q IV.4
A.M. Richter (1), G. Buchberger (2), D. Stifter (3), J. Duchoslav (3), A. Hertwig (1), J. Bonse (1), J. Heitz (2), K. Schwibbert* (1)
(1) Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin, Germany (2) Institute of Applied Physics, Johannes Kepler University Linz, Austria (3) Center for Surface and Nanoanalytics, Johannes Kepler University Linz, Austria * lead presenter

**10:00** **Laser Induced Periodic Surface Structures on conductive polymer films generated with nanosecond laser vector beams** — Q IV.5
Javier Prada-Rodrigo (1 2), Jijil JJ Nivas (3), Meilin Hu (3), Marcella Salvatore (3), Stefano Oscurato (3), Salvatore Amoruso (3), Tiberio A. Ezquerra (4), Pablo Moreno (1), Esther Rebollar (2)
1 Grupo de Aplicaciones del Láser y Fotónica (ALF-USAL), Universidad de Salamanca, Pl. de la Merced s/n, 37008 Salamanca, Spain, 2 Instituto de Química Física Rocasolano (IQFR-CSIC), C/Serrano 119, 28006 Madrid, Spain, 3 Dipartimento di Fisica «Ettore Pancini», Università degli Studi di Napoli "Federico II" Complesso Universitario di Monte S. Angelo Via Cintia I-80126 Napoli (Italy), 4 Instituto de Estructura de la Materia, Consejo Superior de Investigaciones Científicas (IEM-CSIC), Serrano 121, 28006 Madrid, Spain

**10:15** **Laser surface structuring of intrinsic Si, in vacuum and air, with fs pulse sequences at repetition rates from 10 Hz to 200 kHz** — Q IV.6
M. Hu (1), J. JJ Nivas (1,2), M. Valadan (1), R. Fittipaldi (3), A. Vecchione (3), R. Bruzzese (1,2), C. Altucci (4), and S. Amoruso (1,2)
(1) Dipartimento di Fisica "Ettore Pancini", Università di Napoli Federico II, Complesso Universitario di Monte S. Angelo, Via Cintia, I-80126 Napoli, Italy, (2) CNR-SPIN, UOS Napoli, Complesso Universitario di Monte S. Angelo, Via Cintia, I-80126 Napoli, Italy, (3) CNR-SPIN, UOS Salerno, Via Giovanni Paolo II 132, I-84084 Fisciano, Italy, (4) Dipartimento di Scienze biomediche avanzate, Università di Napoli Federico II, Via Pansini 5, 80131 Napoli, Italy

**10:30** **Q&A**

**10:45** **Coffee**

**11:15** INV **A brief survey on open questions about laser-induced periodic surface structures** — Q V.1
J. Bonse (1), C. Florian (1,2), M. Mezera (1), K. Wasmuth (1), A.M. Richter (1), K. Schwibbert (1), J. Krüger (1), F.A. Müller (3), S. Gräf (3) (1) Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin, Germany, (2) Princeton University, USA, (3) Friedrich-Schiller-Universität Jena, Germany

**11:45** INV **Ultrafast laser fabrication of biomimetic surfaces** — Q V.2
E. Stratakis
Institute of Electronic Structure and Laser (IESL), Foundation for Research and Technology (FORTH), Greece

**12:15** **Laser surface irradiation of a topological insulator crystal with femtosecond laser pulses** — Q V.3
Jijil JJ Nivas (1,2), Meilin Hu (1), Rosalba Fittipaldi (3), Antonio Vecchione (3), Riccardo Bruzzese (1,2), and Salvatore Amoruso (1,2)
(1) Dipartimento di Fisica "Ettore Pancini", Università di Napoli Federico II, Complesso Universitario di Monte S. Angelo, Via Cintia, I-80126 Napoli, Italy, (2) CNR-SPIN, UOS Napoli, Complesso Universitario di Monte S. Angelo, Via Cintia, I-80126 Napoli, Italy, (3) CNR-SPIN, UOS Salerno, Via Giovanni Paolo II 132, I-84084 Fisciano, Italy.

**12:30** **Q&A**

**12:45** **Lunch**



**13:45** **Plenary I**

**14:45** **Coffee**

## LIFT : Palla-Papavlu Alexandra

**15:00** INV **Laser-induced Forward Transfer (LIFT) of silver-nanoparticle inks** — Q VI.1
Gert-willem Römer, Justinas Mikšys, Matthias Feinaeugle, Gari Arutinov
Gert-willem Römer: Chair of Laser Processing, Department of Mechanics of Solids, Surfaces & Systems, Faculty of Engineering Technology, University of Twente, Drienerlolaan 5, 7522NB Enschede, The Netherlands, Justinas Mikšys: Chair of Laser Processing, Department of Mechanics of Solids, Surfaces & Systems, Faculty of Engineering Technology, University of Twente, Drienerlolaan 5, 7522NB Enschede, The Netherlands AND Holst Centre/TNO, High Tech Campus 31, 5656AE Eindhoven, The Netherlands Gari Arutinov: Holst Centre/ TNO, High Tech Campus 31, 5656AE Eindhoven, The Netherlands

**15:30** **OPTIMIZATION OF THE LASER-INDUCED FORWARD TRANSFER PROCESS FOR THE PRINTING OF LIVING CELLS** — Q VI.2
A. Casanova 1, L. Duvert 1, J. D. Robin 2, F. Magdinier 2, P. Delaporte 1, A. P. Alloncle 1
1 Aix-Marseille University, CNRS, LP3 UMR 7341, Campus de Luminy, Case 917, 13288, Marseille cedex 9, France 2 Aix-Marseille University, INSERM, MMG, Marseille Medical Genetics, 13385 Marseille, France

**15:45** **Laser-induced forward transfer to deposit metallic particles on textiles** — Q VI.3
Matthias Domke, Sandra Stroj, Justus Landsiedel, Noemí Aguiló-Aguayo
Research Center for Microtechnology, Vorarlberg University of Applied Sciences, Hochschulstr. 1, 6850 Dornbirn, Austria, Research Center for Microtechnology, Vorarlberg University of Applied Sciences, Hochschulstr. 1, 6850 Dornbirn, Austria, Research Institute of Textile Chemistry and Textile Physics, University of Innsbruck, Hoechstersstrasse 73, 6850 Dornbirn, Austria, Research Institute of Textile Chemistry and Textile Physics, University of Innsbruck, Hoechstersstrasse 73, 6850 Dornbirn, Austria,

**16:00** **Conformal laser printing and sintering of Ag nanoparticle inks for the fabrication of micro-conductive patterns K. Andritsos a, I. Theodorakos a, F. Zacharatos a, A. Kabla b, S. Melamed b, F. de la Vega b, Y. Porte c, P. Too c and I. Zergioti a a. School of Applied Mathematical and Physical Sciences, National Technical University of Athens, Iroon Polytechniou 9, 15780, Athens, Greece b. PV Nano Cell Ltd., 8 Hamasger st., P.O. Box 236 Migdal Ha'Emek, Migdal Haemek 2310102, Israel, c. FlexEnable Ltd, 34 Cambridge Science Park, Cambridge, CB4 0FX, United Kingdom** — Q VI.4

**16:15** **Laser printing of alfa-fetoprotein monoclonal antibody functionalized graphene for surface acoustic wave biosensors** — Q VI.5
Voicu, S.I.*(1, 2), Pandele, A.M.(1, 2), Oprea, M.(1, 2) & Tuncel, C.(2).
(1)Advanced Polymers Materials Group, Gheorghe Polizu 1-7. 011061 Bucharest, Romania (2)Faculty of Chemical Engineering and Biotechnologies, University Politehnica of Bucharest, Gheorghe Polizu 1-7. 011061 Bucharest, Romania

**16:30** **Q&A**

**Wednesday june 1**

**Ultrashort laser processing : Evgeny Gurevich**

**09:00** INV **Challenges and opportunities of multi-PW laser experiments** **Q VII.1**
Petru Ghenuche
Extreme Light Infrastructure - Nuclear Physics (ELI-NP), Horia Hulubei» National Institute for Physics and Nuclear Engineering (IFIN-HH)

**09:30** **High power polymer micro-lens tolerance for surface submicron marking** **Q VII.2**
**Tony Hajj 1.4 Djamila Bouaziz1,2,4 Assia Guessoum2 Gregoire Chabrol 1,3 Nacer-E. Demagh 2 Sylvain Lecler 1,4**
1ICube, UMR 7357, Université de Strasbourg-CNRS, 67 412 Illkirch, France 2Laboratoire d'Optique Appliquée, IOPM, Ferhat Abbas University, 19 000 Setif, Algeria 3ECAM Strasbourg-Europe, 67 300 Schiltigheim, France 4INSA de Strasbourg, 67 000 Strasbourg, France

**09:45** **Space-selective creation of luminescence in a new organic material: femtosecond laser irradiation of Zeonex polymer** **Q VII.3**
Ruyue. Que1, Ludivine Houel-Renault2, Mebarek Temagoult3, Matthieu Lancry1, Bertrand Poumellec1
1. Institut de Chimie Moléculaire et des Matériaux d'Orsay - ICMMO, Université Paris-Saclay 2. Institut des Sciences Moléculaires d'Orsay - ISMO, Université Paris-Saclay 3. Institute of Integrative Biology of the Cell - I2BC, Université Paris-Saclay

**10:00** **Time-resolved photoluminescence electro-optic recorder** **Q VII.4**
Ščajev, P. *(1), Miasojedovas, A. (1), Mekys, A. (1)
(1) Institute of Photonics and Nanotechnology, Vilnius University, Saulėtekio Ave. 3, LT 10257 Vilnius, Lithuania

**10:15** **Continuous-Wave mid-Infrared to Visible Frequency Upconversion with a Molecular Optomechanical Nanocavity** **Q VII.5**
W. Chen1, P. Roelli1, H. Hu2, S. Verlekar1, S. P. Amirtharaj1, A. I. Barreda3, T. J. Kippenberg1, M. Kovylina4, E. Verhagen5, A. Martínez4, C. Galland1
1. Institute of Physics, Ecole Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland 2. Hubei Key Laboratory of Optical Information and Pattern Recognition,Wuhan Institute of Technology, Wuhan 430205, China 3. Institute of Applied Physics, Abbe Center of Photonics, Friedrich Schiller University Jena, Albert-Einstein-Str. 15, 07745 Jena, Germany 4. Nanophotonics Technology Center, Universitat Politècnica de València, Camino de Vera s/n, 46022 Valencia, Spain 5. Center for Nanophotonics, AMOLF, Science Park 104, 1098 XG Amsterdam, Netherlands

**10:30** **Optimization of Poly(vinyl chloride) coupling with UV laser radiation for laser ablation propulsion applications** **Q VII.6**
Pietro Battocchio, Jacopo Terragni, Vito Cristino, Nicola Bazzanella, Riccardo Checchetto, Michele Orlandi, Stefano Caramori, Antonio Miotello
University of Trento, Department of Physics, via Sommarive 14, 38123, Trento, Italy, University of Trento, Department of Physics, via Sommarive 14, 38123, Trento, Italy, University of Ferrara, Department of Chemistry, via Luigi Borsari 46, 44121, Ferrara,Italy University of Trento, Department of Physics, via Sommarive 14, 38123, Trento, Italy, University of Trento, Department of Physics, via Sommarive 14, 38123, Trento, Italy, University of Trento, Department of Physics, via Sommarive 14, 38123, Trento, Italy, University of Ferrara, Department of Chemistry, via Luigi Borsari 46, 44121, Ferrara,Italy University of Trento, Department of Physics, via Sommarive 14, 38123, Trento, Italy,

**10:45** **Q&A**

**11:00** **Coffee**

**Ultrashort laser processing: Theory and applications : Evgeny Gurevich**

**11:15** INV **Ultrafast laser interaction with silicon: Critical assessment of excited processes via comparison of modeling with experiment** **Q VIII.1**
Nadezhda M. Bulgakova, Thibault J.-Y. Derrien, Alexander V. Bulgakov
HiLASE Centre, Institute of Physics of the Czech Academy of Sciences, Dolní Břežany, Czech Republic



**11:45** **Multiscale atomistic modelling of ultrafast melting in laser annealing processes** **Q VIII.2**
G. Calogero [1], D. Raciti [1], P. Acosta-Alba [2], F. Cristiano [3], I. Deretzis [1], G. Fisicaro [1], K. Huet [4], S. Kerdilès [2], A. Sciuto [1,5], A. La Magna [1]
[1] CNR-IMM, Zona Industriale VIII Strada 5, 95121 Catania, Italy [2] Université Grenoble Alpes, CEA-LETI, 38000 Grenoble, France [3] LAAS, CNRS and Université de Toulouse, 7av. Du Col. Roche, 31400 Toulouse, France [4] Laser Systems & Solutions of Europe (LASSE), 145 rue des Caboeufs, 92230 Gennevilliers, France [5] Dipartimento di Fisica e Astronomia, Università di Catania, Via Santa Sofia 64, 95125 Catania, Italy

**12:00** **Femtosecond laser-induced transformations on thin-films of 2D Transition-Metal Dichalcogenides A. Fernandez Garcia (1)*, F. Agulló-Rueda (2), P. Sopeña (3), D. Grojo (3) , M. Manso Silvan (1,4), M. Garcia-Lechuga (1,4)** **Q VIII.3**
(1)Departamento de Física Aplicada, Universidad Autónoma de Madrid, 28049, Madrid, Spain, (2)Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas (ICMM-CSIC), 28049, Madrid, Spain, (3) Aix-Marseille Université, CNRS, LP3, UMR7341, 13009 Marseille, France, (4)Centro de Microanálisis de Materiales, Universidad Autónoma de Madrid, 28049, Madrid, Spain

**12:15** **Diamond Thin Film Waveguide and Quantum Cascade Lasers for Sensing Caffeine** **Q VIII.4**
Andrea Teuber1, Giada Caniglia1, Michael Wild2, Matthias Godejohann3, Christine Kranz1, Boris Mizaikoff1,4*
1 Institute of Analytical and Bioanalytical Chemistry, University of Ulm, Ulm, Germany, 2 Diamond Materials, Freiburg, Germany, 3 MG Optical Solutions GmbH, Utting/Ammersee, Germany, 4 Hahn-Schickard, Ulm, Germany

**12:30** **Q&A**

**12:45** **Lunch**

**13:45** **Plenary II**

**14:45** **Coffee**

**Laser surface structuring and direct writing : Patricia Alloncle**

**15:00** INV **Light-Matter Interaction in GaN-based Micro- and Nano-LEDs: using femtosecond lasers for device processing and analyzing the charge-carrier dynamics** **Q IX.1**
Tobias Voss
Institute of Semiconductor Technology and Laboratory for Emerging Nanometrology LENA, Technische Universität Braunschweig, Braunschweig, Germany

**15:30** **UV-Laser crystallization of TiO2 deposited by Low Temperature ALD on polymeric substrate : applications in photocatalysis Massimo Zimbone #, Enrico Napolitani $ , Maria Cantarella #, Vittorio Privitera §, Giuliana Impellizzeri** **Q IX.2**

**15:45** **Flexible and Reusuable Smart Textile based Dry Electrodes for Biopotential Sensing** **Q IX.3**
Yogita Maithani, B. R. Mehta, J. P. Singh
Department of Physics, Indian Institute of Technology-Delhi, Hauz Khas, New Delhi 110016, India

**16:00** **Low surface damage laser processing silicon by laser-induced plasma etching (LIPE)** **Q IX.4**
Heinke, Robert (1,2,*), Ehrhardt, Martin(2), Bauer, Jens(2), Lotnyk, Andriy(2), Lorenz, Pierre(2), Morgenstern, Roy(3), Lampke, Thomas(3), Arnold, Thomas(1,2), Zimmer, Klaus(2)
(1) Institute of Manufacturing Science and Engineering, Technische Universitat Dresden, 01062 Dresden, Germany (2) Department of ultra-precision surfaces, Leibniz Institute of Surface Engineering (IOM), Permoserstraße 15, 04318 Leipzig, Germany (3) Materials and Surface Engineering Group, Technische Universität Chemnitz, 09107 Chemnitz, Germany * lead presenter and corresponding author, Robert.Heinke@iom-leipzig.de

**16:15** **Q&A**

**Thursday june 2**

**Laser-material synthesis : Maria Kandyla**

**09:00** **Study of microstructure, optical behaviors of Rare earth doped Ba0.85Ca0.12RE0.03Ti0.90Zr0.04Nb0.042O3ceramics(RE=Ce3+ andPr3+) 1/ Zeineb Raddaoui 2/ Marwa Bourguiba 3/ Pascal Marchet 4/ Jemai Dhahri 5/ Moez Chafra** **Q X.1**

1/ - Laboratory of Condensed Matter and Nanosciences, Faculty of Sciences of Monastir, University of Monastir, Avenue of the environment , 5019 Monastir, Tunisia. - Institute for Research on Ceramics, University of Limoges, UMR 7315, 87068 Limoges, France. 2/ - Laboratory of Applied Mechanics and systems, School Polytechnic of Tunisia, University of Carthage, La Marsa, Tunisia. - Faculty of Sciences Tunis, University of Tunis el Manar, Tunis 2092. 3/ Institute for Research on Ceramics, University of Limoges, UMR 7315, 87068 Limoges, France. 4/ Laboratory of Condensed Matter and Nanosciences, Faculty of Sciences of Monastir, University of Monastir, Avenue of the environment , 5019 Monastir, Tunisia. 5/ Laboratory of Applied Mechanics and systems, School Polytechnic of Tunisia, University of Carthage, La Marsa, Tunisia.

**09:15** **Laser-assisted molecular beam epitaxy of hexagonal boron nitride** **Q X.2**

L.Stagi, J. Zhang, C. Hilbrunner, J. Malindretos, A. Rizzi
Department of Chemistry, Laboratory of Materials Science and Nanotechnology, CR-INSTM, University of Sassari, Via Vienna 2, 07100, Sassari, Italy, IV. Physikalisches Institut, Georg-August Universität Göttingen, D-37077 Göttingen, Germany, IV. Physikalisches Institut, Georg-August Universität Göttingen, D-37077 Göttingen, Germany, IV. Physikalisches Institut, Georg-August Universität Göttingen, D-37077 Göttingen, Germany, IV. Physikalisches Institut, Georg-August Universität Göttingen, D-37077 Göttingen, Germany

**09:30** **Compositionally tuneable laser synthesised WxMo(1-x)S2 alloys** **Q X.3**

Zharkova E. V. *(1), Averchenko A.V. (1), Salimon I.A (1), Abbas O.A. (1), Sazio P. J. A. (2), Lagoudakis P. G. (1), and Mailis S. (1).
(1) Skolkovo Institute of Science and Technology, Moscow, 121205, Russian Federation, (2) Optoelectronics Research Centre, University of Southampton, Southampton, SO17 1BJ, United Kingdom

**09:45** **Oxygen-deficient niobium oxide layers with improved conductivity formed by powder bed selective ultrafast laser processing** **Q X.4**

B. Sotillo, R. Ariza, P. Fernández, J. Solis
B.S., R.A., P.F.: Department of Materials Physics, Faculty of Physics, University Complutense of Madrid, Madrid, 28040, Spain, R.A., J.S.: Laser Processing Group, Institute of Optics (IO-CSIC), Serrano 121, Madrid, 28006, Spain

**10:00** **Tuning Semiconductor Dopant Concentration: n++ Gas Immersion Laser Doping of p++ Emitters in Phosphorus Oxychloride Atmosphere.** **Q X.5**

F. C. Serra, G. Gaspar, A. S. Viana, I. Costa, D. M. Pêra, J. A. Silva, G. Hahn, L. Vines, J. M. Serra, K. Lobato
Instituto Dom Luiz (IDL), Faculdade de Ciências, Universidade de Lisboa, 1749-016, Lisboa, Portugal, Instituto Dom Luiz (IDL), Faculdade de Ciências, Universidade de Lisboa, 1749-016, Lisboa, Portugal, Centro de Química Estrutural, Faculdade de Ciências (CQE), Universidade de Lisboa, 1749-016, Lisboa, Portugal, Instituto Dom Luiz (IDL), Faculdade de Ciências, Universidade de Lisboa, 1749-016, Lisboa, Portugal,Instituto Dom Luiz (IDL), Faculdade de Ciências, Universidade de Lisboa, 1749-016, Lisboa, Portugal, Instituto Dom Luiz (IDL), Faculdade de Ciências, Universidade de Lisboa, 1749-016, Lisboa, Portugal, Department of Physics, University of Konstanz, 78464 Konstanz, Germany, Department of Physics, Center for Materials Science and Nanotechnology, University of Oslo, N-0371 Oslo, Norway, Instituto Dom Luiz (IDL), Faculdade de Ciências, Universidade de Lisboa, 1749-016, Lisboa, Portugal, Instituto Dom Luiz (IDL), Faculdade de Ciências, Universidade de Lisboa, 1749-016, Lisboa, Portugal

**10:15** **Advanced manufacturing of dense ceramic materials using industrially scalable Laser Furnace technology** **Q X.6**

C. Ozçelik1, H. Amaveda1, M. Mora1, E. Martínez1, B. Ozçelik2, G.F. de la Fuente1, L. A. Angurel1
1Instituto de Nanociencia y Materiales de Aragón (CSIC-University of Zaragoza), Zaragoza, Spain 2 Department of Physics, Faculty of Sciences and Letters, Çukurova University, Adana, Turkey

**10:30** **Selective Laser Melting of various lunar soil simulants** **Q X.7**

Danijela Ignjatovic Stupar, Grégoire Robert Chabrol, Thierry Cutard, Sylvain Lecler, Jocelyne Brendle
International Space University, ECAM Strasbourg-Europe, IMT Mines Albi-Carmaux, INSA of Strasbourg, IS2M

**10:45** **Q&A**



**11:00** **Coffee**

**Laser processing and applications : Patricia Alloncle**

**11:30** **Laser-based experiments to investigate nuclear fuels behaviour under thermal stresses** **Q XI.1**

Thomas Doualle, Matthieu Reymond, Vincent Klosek, Jerome Sercombe, Laurent Gallais and Yves Pontillon
CEA, DES, IRESNE, DEC, Cadarache F-13108 Saint-Paul-Lez-Durance, France, Aix Marseille Université, CNRS, Centrale Marseille, Institut Fresnel, Marseille, France

**11:45** **Ultrafast laser ablation for surface preparation of CFRP composites used in shipbuilding** **Q XI.2**

Ana J. López, Alicia Moreno, Pablo Pardiñas, Javier Lamas, Alberto Ramil
Universidade da Coruña, Campus Industrial de Ferrol, Ferrol, 15403, A Coruña, Spain

**12:00** **The lazer radiation propagation mechanism in optical waveguides-fibers** **Q XI.3**

Egorov E.V.(1,2,3), Egorov V.K.(1)
(1) Institute of Microelectronics Technology Russian Academy of Science (IMT RAS) (2) Institute of Radio Engineering and Electronics Russian Academy of Science (IRE RAS) (3) Financial University under the Government of the Russian Federation

**12:15** **Wavelength-selective isotype heterojunction n+-ZnO/n-Si photodetector** **Q XI.4**

G. Chatzigiannakis, A. Jaros, R. Leturcq, J. Jungclaus, T. Voss, S. Gardelis, M. Kandyla
Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vassileos Constantinou Avenue, 11635 Athens, Greece, Institute of Semiconductor Technology, Braunschweig University of Technology, Hans-Sommer Strasse 66, 38106 Braunschweig, Germany, Materials Research and Technology Department, Luxembourg Institute of Science and Technology, 41 Rue du Brill, L-4422 Belvaux, Luxembourg, Institute of Semiconductor Technology, Braunschweig University of Technology, Hans-Sommer Strasse 66, 38106 Braunschweig, Germany, Institute of Semiconductor Technology, Braunschweig University of Technology, Hans-Sommer Strasse 66, 38106 Braunschweig, Germany, Department of Physics, National and Kapodistrian University of Athens, Panepistimiopolis Zografos, 15784 Athens, Greece, Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vassileos Constantinou Avenue, 11635 Athens, Greece

**12:30** **Regulating breast cancer cell adhesion on laser-patterned surfaces** **Q XI.5**

M. Kanidi, A. Papadimitropoulou, C. Charalampous, Z. Chakim, G. Tsekenis, A. Sinani, C. Riziotis, M. Kandyla
National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, 48 Vasileos Constantinou Ave., Athens 11635, Greece, Biomedical Research Foundation of the Academy of Athens, 4 Soranou Ephessiou St., 115 27 Athens, Greece, Biomedical Research Foundation of the Academy of Athens, 4 Soranou Ephessiou St., 115 27 Athens, Greece, Biomedical Research Foundation of the Academy of Athens, 4 Soranou Ephessiou St., 115 27 Athens, Greece, Biomedical Research Foundation of the Academy of Athens, 4 Soranou Ephessiou St., 115 27 Athens, Greece, National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, 48 Vasileos Constantinou Ave., Athens 11635, Greece, National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, 48 Vasileos Constantinou Ave., Athens 11635, Greece, National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, 48 Vasileos Constantinou Ave., Athens 11635, Greece,

**12:45** **Q&A**

**13:00** **Concluding remarks**

**13:45** **Plenary III**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM S

## Polymer and hybrid thin films deposited from the vapor phase for functional (bio-devices)

*Symposium Organizers :*

Anna Maria COCLITE, Graz University of Technology

Meike KOENIG, Karlsruhe Institute of Technology

Nicolas BOSCHER, Luxembourg Institute of Science and Technology (LIST)

Rong YANG, Cornell University, USAMail : ryang@cornell.edu

To be published in ???

## Monday may 30

**08:45** **Welcome and Introduction to the Symposium**

### Biomaterials part I : Anna Maria Coclite

**09:00** INV **Surface Hydrophobicity Modulates the Key Characteristics of Cancer Spheroids through the Interaction with the Adsorbed Proteins** S 1.1
Sung Gap Im
Department of Chemical and Biomolecular Engineering, Korea Advanced Institute of Science and Technology (KAIST)

**09:30** **Aero-hydrogels via initiated Chemical Vapor Deposition for application as cell scaffolds** S 1.2
Torge Hartig[1], Wiebke Reichstein[1], Margarethe Hauck[2], Gabriel Chan[1], Mohammadreza Taale[3], Christine Arndt[3], Florian Rasch[2], Maximilian Burk[1], Thomas Strunskus[1], Christine Selhuber-Unkel[3], Rainer Adelung[2], Franz Faupel[1], Stefan Schröder[1], Fabian Schütt[2]
[1]Chair for Multicomponent Materials, Institute of Materials Science, Kiel University, Kiel, Germany [2]Functional Nanomaterials Chair, Institute of Materials Science, Kiel University, Kiel, Germany [3]Institute for Molecular Systems Engineering, Heidelberg University, Heidelberg, Germany

**09:45** **Coating of functional patches for use in biomedical applications** S 1.3
Eda Güney (1)*, Beril Üstünkaya (1), Bengü Süeda Şengül (1), Gozde Ozaydin Ince (1,2)
(1) Materials Science and Nanoengineering Department, Faculty of Engineering and Natural Sciences, Sabanci University, 34956, Istanbul, Turkey (2) Sabanci University Nanotechnology Research and Application Center (SUNUM), Sabanci University, 34956, Istanbul, Turkey

**10:00** **Innovative parylene-based multilayers using low temperature CVD technologies** S 1.4
Sébastien Buchwalder *(1,3), Juan Jose Diaz Leon (2), Antoine Descoeudres (2), Jérôme Steinhauser (3), Aurelio Borzì (4), Antonia Neels (4), Andreas Hogg (3), Jürgen Burger (1)
(1) sitem Center for Translational Medicine and Biomedical Entrepreneurship, University of Bern, Switzerland, (2) CSEM PV-Center, Neuchâtel, Switzerland, (3) Coat-X SA, Switzerland, (4) Empa Center for X-ray Analytics, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, * lead presenter

**10:15** **Discussion 1**

**10:30** **Coffee**

### Biomaterials part II : Meike Koenig

**10:45** INV **Atmospheric-pressure plasma deposition of functional silicon-based thin films and their application in biomaterials** S 2.1
Matteo Gherardi, Vittorio Colombo, Romolo Laurita, Giulia Laghi
Industrial Engineering Department (DIN) & Industrial Research Centre for Advanced Mechanics and Materials (CIRI-MAM) at Alma Mater Studiorum-Università di Bologna, Industrial Engineering Department (DIN) & Industrial Research Centre for Advanced Mechanics and Materials (CIRI-MAM) at Alma Mater Studiorum-Università di Bologna, Industrial Engineering Department (DIN) & Industrial Research Centre for Health and Technology (CIRI-SDV) at Alma Mater Studiorum-Università di Bologna, Industrial Engineering Department (DIN) at Alma Mater Studiorum-Università di Bologna,

**11:15** INV **Plasma polymers as a versatile platform for cell attachment and proliferation** S 2.2
Lenka Zajíčková, Lucie Blahová, Martina Buchtelová, David Nečas, Jiřina Medalová, Petra Křížková, Anton Manakhov, Anastasiya O. Solovieva, Zdeňka Kolská, Dirk Hegemann
CEITEC Brno University of Technology & Masaryk University, Brno, Czech Republic, CEITEC Brno University of Technology, Czech Republic, CEITEC Brno University of Technology, Czech Republic, CEITEC Brno University of Technology, Czech Republic, Masaryk University, Brno, Czech Republic, Masaryk University, Brno, Czech Republic, Research Institute of Clinical and Experimental Lymphology—Branch of the ICG SB RAS, Novosibirsk, Russia, Research Institute of Clinical and Experimental Lymphology—Branch of the ICG SB RAS, Novosibirsk, Russia, J.E. Purkyně University, Ústí nad Labem, Czech Republic, Empa, St. Gallen, Switzerland

**11:45** **Discussion 2**



### Anti-fouling coatings : Rong Yang

**13:30** **Novel aerosol assisted plasma deposition of PEG containing coatings for non-fouling application** S 3.1
Annalisa Treglia, Fabio Palumbo, Roberto Gristina, Pietro Favia
Annalisa Treglia , Pietro Favia Department of Chemistry, University of Bari "Aldo Moro", Bari, Italy Fabio Palumbo, Roberto Gristina Institute of Nanotechnology, National Research Council, Bari , Italy

**13:45** **Rapid antibacterial activity by plasma-deposited AgOx-doped TiOx catalysts** S 3.2
Dirk Hegemann, Qun Ren, Patrick Rupper
Empa, Swiss Federal Laboratories for Materials Science and Technology, St.Gallen, Switzerland

**14:00** **Plasma-assisted deposition of fluorinated silane thin films for antimicrobial applications** S 3.3
Laghi G.*(1), Colombo V.(1),(2),(3),(4), Condorelli G.G.(5), Conoci S.(6),(7), Franco D.(6),(7), Gallerani R.(1), Guglielmino S.(6), Laurita R.(1),(2),(8), Morganti D.(7), Traina F.(7),(9) & Gherardi M.(1),(2),(3),(4)
(1) Department of Industrial Engineering, Alma Mater Studiorum-University of Bologna, Bologna, Italy (2) AlmaPlasma s.r.l., Viale G. Fanin 48, 40127 Bologna, Italy (3) Interdepartmental Centre for Industrial Research Advanced Mechanical Engineering Applications and Materials Technology, Alma Mater Studiorum-University of Bologna, Bologna, Italy (4) Interdepartmental Centre for Industrial Research Agrifood, Alma Mater Studiorum-University of Bologna, Bologna, Italy (5) Department of Chemical Science, University of Catania, Catania, Italy (6) Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Messina, Italy (7) IBMTech s.r.l., Via Napoli 116, 95127 Catania, Italy (8) Interdepartmental Centre for Industrial Research Health Sciences and Technologies, Alma Mater Studiorum-University of Bologna, Bologna, Italy (9) Department of Biomedical and Neuromotor Sciences, Alma Mater Studiorum-University of Bologna, Bologna, Italy

**14:15** INV **Addressing Biosensor Fouling with Thin Polymer Films Created via Photoinitiated Chemical Vapor Deposition** S 3.4
Trisha L. Andrew, Ruolan Fan, Kwang-Won Park, Peiyao Zhao
University of Massachusetts Amherst

**14:45** **Initiated Chemical Vapor Deposition on microstructures to inhibit biofilm formation** S 3.5
Amelia Whiteley, Guillaume Nonglaton, Vincent Jousseaume
Univ. Grenoble Alpes, CEA, LETI, F-38000 Grenoble,Univ. Grenoble Alpes, CEA, LETI, F-38000 Grenoble,Univ. Grenoble Alpes, CEA, LETI, F-38000 Grenoble

**15:00** INV **MAKING POLYMERS FROM VAPORS: TOWARDS CHEMICAL, TOPOLOGICAL AND BIOLOGICAL CONTROLLED BIOINTERFACES** S 3.6
Joerg Lahann
Biointerfaces Institute, University of Michigan, Ann Arbor, MI 48109, USA

**15:30** **Discussion 3**

**15:45** **Coffee**

### Thin films for energy : Nicolas Boscher

**16:00** INV **Chemical vapor deposition of polymers for biomedical and energy applications** S 4.1
Afshin Dianatdar, Adrivit Mukherjee, Giovanni Fortunato, Ranjita K. Bose
University of Groningen

**16:30** **Engineering Fused Ni(II) Porphyrin polymer: Effect of Substituent on Electro-chemical and Opto-electronic Properties** S 4.2
Deepak Bansal
Luxembourg Institute of Science and Technology

**16:45** INV **Vapor Phase Deposition of Organic Frameworks and Networks** S 4.3
Siamak Nejati Syed Ibrahim Gnani Peer Mohammad
University of Nebraska

**17:15** INV **Hybrid Ceramic-Polymer Materials for Energy, Sensing, and Sustainability** S 4.4
B. Reeja-Jayan
Department of Mechanical Engineering, Carnegie Mellon University

**17:45** **Discusson 4**

**Tuesday may 31**

## Biomaterials part III : Meike Koenig

**09:00** INV **Vapor-Phase Fabrication of Polymer Coatings, Device, Particles, and Porous Scaffolds** — S 5.1
Hsien-Yeh Chen
Department of Chemical Engineering, National Taiwan University

**09:30** **Tough, Stretchable and Recyclable Copolymer with High Stability, Transparency and Processability for Wearable Bio-electronics** — S 5.2
Gargi Ghosh, Nae-Eung Lee
Gargi Ghosh, Nae-Eung Lee School of Advanced Materials Science & Engineering, Sungkyunkwan University, Suwon, Gyeonggi-do 16419, Republic of Korea, Nae-Eung Lee SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University, Suwon, Gyeonggi-do 16419, Republic of Korea, Research Centre for Advanced Materials Technology, Sungkyunkwan University, Suwon, Gyeonggi-do 16419, Republic of Korea, Samsung Advanced Institute for Health Sciences & Technology (SAIHST), Sungkyunkwan University, Suwon, Gyeonggi-do 16419, Republic of Korea, Institute of Quantum Biophysics (IQB), Sungkyunkwan University Suwon, Gyeonggi-do 16419, Republic of Korea, Biomedical Institute for Convergence at SKKU (BICS), Sungkyunkwan University Suwon, Gyeonggi-do 16419, Republic of Korea.

**09:45** **Triboelectric hybrid PVDF-Nylon membrane for enhancing efficiency of particulate matter filtration with sustaining pressure drop** — S 5.3
Dong Hee Kang, Hyun Wook Kang
Advanced Fluidics & Nano Technology Lab, Department of Mechanical Engineering, Chonnam National University, Gwangju, Korea, Republic of

**10:00** **Discusson 5**

**10:15** **Coffee**

## Mechanism of deposition/Deposition on patterns : Dirk Hegemann

**10:30** INV **Synthesis of chemically patterned films using atmospheric pressure dielectric barrier discharges** — S 6.1
Annaëlle Demaude*, Juliette Zveny*, Michael Gordon°, François Reniers*
* Chemistry of Surfaces, Interfaces and Nanomaterials, Université libre de Bruxelles, Brussels, Belgium ° Chemical Engineering Dept. University of California, Santa Barbara, USA

**11:00** **Investigating the conformality of organosilicate polymers by iCVD: Challenges and opportunities** — S 6.2
Chara Zavvou, Chloé Guérin, Aude Lefevre, Vincent Jousseaume
Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble

**11:15** INV **Plasma polymerization with ambient-pressure dielectric-barrier discharges – insights from single-filament studies** — S 6.3
Prof. Claus-Peter Klages, Lars Bröcker
TU Braunschweig, Institute for Surface Technology

**11:45** INV **Can we tune the mechanical properties of plasma polymer films by controlling their growth temperature?** — S 6.4
Rony Snyders, Nathan Vinx, Pascal Damman, Philipe Leclère, Damien Cossement, Damien Thiry
Chimie des Interactions Plasma-Surface (ChIPS), University of Mons and Materia Nova Research Center, Parc Initialis, Mons Chimie des Interactions Plasma-Surface (ChIPS), University of Mons Interface et Fluides Complexes (Influx), University of Mons Laboratory for Chemistry of Novel Materials (CMN) Materia Nova Research Center, Parc Initialis, Mons Chimie des Interactions Plasma-Surface (ChIPS), University of Mons

**12:15** **Discusson 6**

## Hybrid thin films : Rong Yang

**15:00** INV **Recent advances in the aerosol-assisted atmospheric pressure plasma deposition of hybrid nanocomposite coatings** — S 7.1
Fiorenza Fanelli, Antonella Uricchio, Teresa Lasalandra, Gael Plantard, Francoise Massines
National Research Council (CNR), Institute of Nanotechnology (NANOTEC), Bari, Italy, Department of Chemistry, University of Bari “Aldo Moro”, Bari, Italy, University of Perpignan Via Domitia, Perpignan, France, Laboratoire Procédés Matériaux et Energie Solaire, PROMES-CNRS, UPR 8521, Perpignan, France



**15:30** INV **Hybrid Materials via Vapor Phase Infiltration: The Influence of the Inorganic Component on Chemical, Physical, and Functional Pr** — S 7.2
Mark D. Losego
Georgia Institute of Technology

**16:00** **Combining initiated chemical vapor deposition and plasma-enhanced atomic layer deposition: a study of initial growth and interfa** — S 7.3
Lisanne Demelius, Katrin Unger, Anna Maria Coclite
Institute of Solid State Physics - Graz University of Technology

**16:15** INV **Functional Thin Films by Molecular Layer Deposition** — S 7.4
Stacey F. Bent
Department of Chemical Engineering, Stanford University

**16:45** **Discusson 7**

**Wednesday june 1**

## Porous thin films and multilayers : Junjie Zhao

**09:00** INV **A change of POREspective: from avoiding to exploiting porosity in organic and inorganic thin films** — S 8.1
Alberto Perrotta
National Research Council (CNR) - Institute of Nanotechnology (NANOTEC)

**09:30** INV **Tailored Polymer Thin Films via Initiated Chemical Vapor Deposition: From Fundamentals to Functional Applications** — S 8.2
Stefan Schröder
Institute for Materials Science, Kiel University, Kiel, Germany

**10:00** **Deposition and evaluation of gradient polymers via initiated chemical vapor deposition (iCVD) for anti-icing applications** — S 8.3
Hernandez Rodriguez, G., Coclite, A.M. ghernandezrodriguez@tugraz.at, anna.coclite@tugraz.at
Institute of Solid State Physics, Graz University of Technology, Graz, Austria

**10:15** **Discusson 8**

**10:30** **coffee**

## Sensors based on thin films : Junjie Zhao

**10:45** **Initiated chemical vapor deposition (iCVD) of photoswitchable thin films and freestanding polymer structures** — S 9.1
Maximilian H. Burk (1), Stefan Schröder (1), Stefan Rehders (1), Thomas Strunskus (1), Rainer Herges (2) and Franz Faupel (1)
(1) Faculty of Engineering, Kiel University, Kaiserstr. 2, 24143 Kiel, Germany. (2) Otto-Diels-Institute for Organic Chemistry, Kiel University, 24118 Kiel, Germany.

**11:00** **Multiresponsive Soft Actuators Based on a Thermoresponsive Hydrogel and Embedded Laser-Induced Graphene** — S 9.2
Alexander Dallinger, Paul Kindlhofer, Francesco Greco, Anna Maria Coclite
Alexander Dallinger: Institute of Solid State Physics, NAWI Graz, Graz University of Technology, Petersgasse 16, Graz (Austria), Paul Kindlhofer: Institute of Solid State Physics, NAWI Graz, Graz University of Technology, Petersgasse 16, Graz (Austria), Francesco Greco: Institute of Solid State Physics, NAWI Graz, Graz University of Technology, Petersgasse 16, Graz (Austria), The Biorobotics Institute, Scuola Superiore Sant'Anna, Viale R. Piaggio 34, 56025 Pontedera (Italy), Anna Maria Coclite: Institute of Solid State Physics, NAWI Graz, Graz University of Technology, Petersgasse 16, Graz (Austria),

**11:15** **Smart Core-Shell Nanostructures for Force, Humidity and Temperature Sensing** — S 9.3
Taher Abu Ali, Dr. Barbara Stadlober, Prof. Anna Maria Coclite
1. Graz University of Technology, Institute of Solid State Physics 2. Joanneum Research, Institute for Surface Technologies and Photonics

**11:30** **Oxidative chemical vapor deposition of conductive polymers for flexible piezoresistive polymer composites** — S 9.4
Adrivit Mukherjee, Sara Selenica, Dr. Ajay G. P. Kottapalli, Prof. Marleen Kamperman, Dr. Ranjita K. Bose
Product Technology, Department of Chemical Engineering, Engineering and Technology Institute (ENTEG), University of Groningen, The Netherlands, Product Technology, Department of Chemical Engineering, Engineering and Technology Institute (ENTEG), University of Groningen, The Netherlands, Advanced Production Engineering (APE), Engineering and Technology Institute Groningen (ENTEG), University of Groningen, The Netherlands, Polymer Science, Zernike Institute for Advanced Materials (ZIAM), University of Groningen, The Netherlands, Product Technology, Department of Chemical Engineering, Engineering and Technology Institute (ENTEG), University of Groningen, The Netherlands

**11:45** **Hydrogen gas monitoring using a polymer-based conductometric sensor** — S 9.5
Iulia ANTOHE1*, Andrei Stochioiu1, Luiza-Izabela JINGA1, Andreea MIHĂILESCU1, Gianina POPESCU-PELIN1, Vlad-Andrei ANTOHE2,3 and Gabriel SOCOL1*
1 National Institute for Lasers, Plasma and Radiation Physics, Atomistilor 409, 077125 Magurele, Romania 2 Institute of Condensed Matter and Nanosciences (IMCN), Université Catholique de Louvain, 1348 Louvain-la-Neuve, Belgium. 3 Research and Development Center for Materials and Electronic & Optoelectronic Devices, Faculty of Physics, University of Bucharest, 077125 Măgurele, Romania
* Corresponding authors: iulia.antohe@inflpr.ro, gabriel.socol@inflpr.ro



**12:00** **Organic Electrochemical Transistor (OECT) for Real-Time, Electrical quantification of SARS-CoV-2 neutralizing antibodies** — S 9.6
Francesco Decataldo, Laura Grumiro, Maria Michela Marino, Francesca Faccin, Catia Giovannini, Martina Brandolini, Giorgio Dirani, Francesca Taddei, Davide Lelli, Marta Tessarolo, Maria Calienni, Carla Cacciotto, Antonio Lavazza, Vittoria Cattani, Beatrice Fraboni, Alessandra Scagliarini and Vittorio Sambri
Department of Physics and Astronomy, Alma Mater Studiorum - University of Bologna Francesco Decataldo, Marta Tessarolo, Maria Calienni, Beatrice Fraboni, Unit of Microbiology, The Great Romagna Hub Laboratory, Pievesestina (Cesena) Laura Grumiro, Maria Michela Marino, Martina Brandolini, Giorgio Dirani, Francesca Taddei, Vittorio Sambri, Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna "Bruno Ubertini" (IZSLER), 25124 Brescia, Italy Francesca Faccin, Davide Lelli, Antonio Lavazza Department of Experimental, Diagnostic and Specialty Medicine- DIMES, University of Bologna Catia Giovannini, Carla Cacciotto, Alessandra Scagliarini, Vittorio Sambri Center for Applied Biomedical Research (CRBA), S.Orsola-Malpighi University Hospital, 40138 Bologna, Italy Catia Giovannini DVM, Department of Veterinary Medical Sciences, University of Bologna Vittoria Cattani

**12:15** **Discussion 9**

## Thin films for (opto)electronics : Shannan O'Shaughnessy

**15:00** INV **Correlation of Emulsion Chemistry and Film Morphology for Polymers deposited by RIR-MAPLE** — S 10.1
Stiff-Roberts, A.D.*(1)(2) and Zhang, B.(1).
(1)Department of Electrical & Computer Engineering, Duke University, Durham, NC USA (2)University Program in Materials Science & Engineering, Duke University, Durham, NC USA * lead presenter

**15:30** **Strain-resistant transparent polymer barrier layer for flexible optics by iCVD** — S 10.2
Yineng Zhao, Wyatt Tenhaeff
Materials Science Program, University of Rochester, Department of Chemical Engineering, University of Rochester

**15:45** INV **Thin Film Coatings for Flexible Optics Prepared by Polymer Chemical Vapor Deposition** — S 10.3
Wyatt E. Tenhaeff
Department of Chemical Engineering, University of Rochester

**16:15** INV **Accessing and Utilizing Atypical Deposition Behavior of iCVD and oCVD** — S 10.4
Kenneth K. S. Lau
Department of Chemical and Biological Engineering, Drexel University

**16:45** **In-situ ellipsometry study on multilayer optical coatings** — S 10.5
Parinaz Esbah, Wyatt Tenhaeff
Dept. of Chemical Engineering, University of Rochester, Rochester, New York, The United States.

**17:00** **Discussion 10**

**Thursday june 2**

**Functional thin films : Anna Maria Coclite**

**09:00** **Detection of SARS-CoV-2 Antigens and Antibodies Using OFET Biosensors Based on a Soft and Stretchable Semiconducting Polymers** **S 11.1**

Ditte, K.(1,2), Nguyen Le, T. A.(3,4), Ditzer, O.(1,2), Sandoval Bojorquez, D. I.(3), Chae, S.(1), Bachmann M.(3,4), Baraban, L.(3), Lissel, F.(1,2)
(1)Leibnitz Institute of Polymer Research Dresden e.V., Germany (2)Faculty of Chemistry and Food Chemistry, Dresden Technical University, Germany (3) Institute of Radiopharmaceutical Cancer Research, Helmholtz-Zentrum Dresden-Rossendorf, Germany (4)Faculty of Medicine Carl Gustav Carus, Dresden Technical University, Germany

**09:15** **Modelling Crystallisation in Polymers** **S 11.2**

Rasha Algerhami, Nigel Clarke
Physics and astronomy department University of Sheffield United Kingdom

**09:30** **A Solid, Conductive Microfiber for Biodegradable Stretchable Electronics** **S 11.3**

Gargi Ghosh, Nae-Eung Lee
School of Advanced Materials Science and Engineering, Sungkyunkwan University (SKKU), Suwon, Gyeonggi-do 16419, Republic of Korea

**09:45** **The influence of electron beam irradiations on the mechanical properties of magnesium-doped hydroxyapatite/chitosan coatings** **S 11.4**

A.Groza1, B.Bita1, E.Stancu1, C.Staicu1, O.Pompilian1, C.Ciobanu2, S.Iconaru2, D.Predoi2
1National Institute for Laser, Plasma and Radiation Physics, 409 Atomistilor Street, P.O. Box MG 36, Magurele, 077125 Bucharest, Romania 2National Institute of Materials Physics, Atomistilor Street, No. 405A, P.O. Box MG 07, 077125 Magurele

**10:00** **Improving the degradation rate of AZ31B alloy coated with Mg and Si doped hydroxyapatite** **S 11.5**

Alina Vladescu1, Anca C. Parau1, Diana M. Vranceanu2, Iulian Pana1, Gabriela A. Juravlea1, Gianfranco Palumbo3, Giuseppina Ambrgio4, Cosmin M. Cotrut2
1National Institute of Research and Development for Optoelectronics - INOE 2000, 409 Atomistilor St., R077125, Magurele, Romania 2University Politehnica of Bucharest, Faculty of Materials Science and Engineering, 313 Spl. Independentei, Bucharest, RO60042, Romania 3Department of Mechanics, Mathematics and Management, Politecnico di Bari, Via Orabona4, 70126, Bari, Italy 4Department of Mechanical, Energy and Management Engineering - University of Calabria, P. Bucci, 87036 Rende (CS), Italy

**10:15** **Multilayer transparent conductive electrode based on guanine** **S 11.6**

M. Socol1, N. Preda1, C. Breazu1, A. Costas1, G. Petre1, A. Stanculescu1, I. Stavarache1, A. Stochioiu2, G. Socol2, M. Girtan3
1National Institute of Material Physics, 405A Atomistilor Street, 077125, Magurele, Romania 2National Institute for Lasers, Plasma and Radiation Physics, 409 Atomistilor Street, 077125, Magurele, Romania 3Photonics Laboratory, (LPhiA) E.A. 4464, SFR Matrix, Université d'Angers, Faculté des Sciences, 2 Bd Lavoisier, 49045 Angers, France

**10:20** **Discussion 11 and Closing remarks**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM U

## Advanced characterization of organic and hybrid materials

*Symposium Organizers :*

Emanuele ORGIU, Institut national de la recherche scientifique – University of Québec

Ingo SALZMANN, Concordia University

Natalie BANERJI, University of Bern

Steffen DUHM, Soochow University

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**Monday may 30**

**08:45** **Welcome and Introduction to the Symposium**

## Doping phenomena I : Natalie Banerji - Steffen Duhm

**09:00** INV **CHARGE TRANSPORT AND THERMOELECTRIC PROPERTIES OF HIGH CONDUCTIVITY OF CONJUGATED POLYMERS** — U 1.1
Henning Sirringhaus
Cavendish Laboratory, University of Cambridge

**09:30** **Electrochemical doping mechanisms in the ordered and disordered phases of P3HT** — U 1.2
Priscila Cavassin, Isabelle Holzer, Olivier Bardagot, Julien Réhault, Natalie Banerji
University of Bern

**09:45** **Bipolarons role for high conductivities in electrochemically doped P3HT probed via in-situ THz spectroscopy** — U 1.3
Demetra Tsokkou, Priscila Cavassin and Natalie Banerji
Department of Chemistry, Biochemistry and Pharmacy (DCBP), University of Bern, Freiestrasse 3, 3012 Bern, Switzerland.

**10:00** **Dopant-induced broadening of the density of states governs ion-pair formation in molecularly doped P3HT** — U 1.4
Hannes Hase, Michael Berteau-Rainville, Somaiyeh Charoughchi, Wolfgang Bodlos, Roland Resel, Emanuele Orgiu, Ingo Salzmann
Department of Physics, Concordia University, Montreal, Canada, Institut national de la recherche scientifique (INRS), Varennes, Canada, Department of Chemistry and Biochemistry, Concordia University, Montreal, Canada, Institute of Solid State Physics, TU Graz, Graz, Austria, and Materials Science and Engineering, Stanford University, Stanford, California 94305, USA, Institute of Solid State Physics, TU Graz, Graz, Austria, Institut national de la recherche scientifique (INRS), Varennes, Canada, Department of Physics, Department of Chemistry and Biochemistry, Centre for Research in Molecular Modeling (CERMM), and Centre for NanoScience Research (CeNSR), Concordia University, Montreal, Canada

**10:15** **Discussion**

**10:30**

## Advanced Microscopies I : Roland Resel

**11:00** INV **Advanced characterisation of conjugated polymers by high-resolution STM imaging** — U 2.1
Giovanni Costantini
Department of Chemistry, University of Warwick

**11:30** **Direct assessment of charge transport ability of organic semiconductor by secondary electron spectrum** — U 2.2
Wen-Shan Zhang, Rasmus R. Schröder
Centre for Advanced Materials, Universität Heidelberg & Bioquant, Univeristy Hospital Heidelberg, D-69120 Heidelberg, Germany

**11:45** **Hyperspectral mid-infrared single-pixel microscopy** — U 2.3
Alexander Ebner, Paul Gattinger, Ivan Zorin, Christian Rankl, Markus Brandstetter
RECENDT ? Research Center for Non-Destructive Testing GmbH, Linz, 4040, Austria, RECENDT ? Research Center for Non-Destructive Testing GmbH, Linz, 4040, Austria, RECENDT ? Research Center for Non-Destructive Testing GmbH, Linz, 4040, Austria, RECENDT ? Research Center for Non-Destructive Testing GmbH, Linz, 4040, Austria, RECENDT ? Research Center for Non-Destructive Testing GmbH, Linz, 4040, Austria

**12:00** **Discussion**

**12:15** **Lunch**

## Doping phenomena II : Ingo Salzmann

**13:45** INV **Towards a unified understanding of charge transfer, release and transport in doped organic semiconductors** — U 3.1
Gabriele D'Avino
Grenoble Alpes University, CNRS, Grenoble INP, Institut Ne?el, 25 rue des Martyrs, 38042 Grenoble, France



**14:15** **Molecular Quadrupole Moments Promote Ground?State Charge Generation in Doped Organic Semiconductors** — U 3.2
Alberto Privitera(1), Giacomo Londi(2), Moritz K. Riede(1), Gabriele d'Avino(3) and David Beljonne(2)
(1) Clarendon Laboratory, Department of Physics, University of Oxford, Oxford, OX1 3PU UK (2) Laboratory for Chemistry of Novel Materials, University of Mons, Mons, B-7000 Belgium (3) Institut Néel, CNRS and Grenoble Alpes University, Grenoble, F-38042 France

**14:30** **Controlling the surface and interface properties of Pb-free perovskites/charge transport materials by lattice engineering** — U 3.3
Pingping JIANG (1), Boubacar TRAORE (2), Mikael KEPENEKIAN (2), George VOLONAKIS (2), Claudine KATAN (2), Laurent PEDESSEAU (1), and Jacky EVEN (1)
(1) Univ Rennes, INSA Rennes, CNRS, Institut FOTON - UMR 6082, F-35000 Rennes, France (2) Univ Rennes, ENSCR, INSA Rennes, CNRS, ISCR (Institut des Sciences Chimiques de Rennes) - UMR 6226, F-35000 Rennes, France

**14:45** **Discussion**

**15:00**

## 4: Photophysics I : Emanuele Orgiu

**15:30** **Hot phonon bottleneck effect in quasi-2D perovskites** — U 4.1
Ziyuan Ge(1), Ben P. Carwithen(1), Martin Kroll(2), Thomas R. Hopper(1), Karl Leo(2), Yana Vaynzof(2), Artem A.Bakulin(1*)
(1). Department of Chemistry and Centre for Processable Electronics, Imperial College London, W12 0BZ, United Kingdom (2). Centre for Advancing Electronics Dresden, Technische Universität Dresden, 01069 Dresden, Germany

**15:45** INV **Tuning the coherent propagation of organic exciton-polaritons through dark state delocalization** — U 4.2
Andrew Musser
Cornell University

**16:15** **Discussion**

**16:30**

## : Ingo Salzmann

**16:45** **Dielectric Tensor of Micro-Textured Organic Thin Films obtained by Imaging Mueller Matrix Ellipsometry** — U 5.1
Manuela Schiek (1), S. Funke (2), M. Duwe (2), P.H. Thiesen (2), K. Hingerl (1), F. Balzer (3)
(1) Johannes Kepler University of Linz, Austria, (2) Accurion GmbH Göttingen, Germany, (3) University of Southern Denmark, DK

**16:45** **Environmental stability of an amine-doped rigid polymer for printed electronics** — U 5.2
Yang, C.-Y.(1), Stoeckel, M.-A.*(1), Ruoko, T.-P.(1), Wu, H.-Y.(1), Liu, X.(1), Kolhe, N.B.(2), Wu, Z.(3), Puttisong, Y.(4), Musumeci, C.(1), Massetti, M.(1), Sun, H.(1), Xu, K.(1), Tu, D.(1), Chen, W.M.(4), Woo, H.Y.(3), Fahlman, M.(1), Jenekhe, S.A.(2), Berggren, M.(1), Fabiano, S.(1)
(1) Laboratory of Organic Electronics, Department of Science and Technology, Linköping University, Norrköping, Sweden (2) Department of Chemical Engineering and Department of Chemistry, University of Washington, Seattle, WA, USA (3) Department of Chemistry, College of Science, Korea University, Seoul, 136-713, Republic of Korea (4) Department of Physics, Chemistry and Biology, Linköping University, Linköping, Sweden

**16:45** **Enhancing the stability of Cs-based perovskites by mixing the Sn-Pb cations** — U 5.3
Julia Marí-Guaita, Amal Bouich, Bernabé Marí
Institut de Disseny i Fabricació, Universitat Politècnica,València, Spain

**16:45** **Determination of the Glass Transition Temperature from Confined Acoustic Phonon Modes in Nanometric PMMA Films** **U 5.4**

D. Brick, M. Hofstetter, F. Noll, P. Stritt, J. Rinder, V. Gusev, T. Dekorsy, M. Hettich
Department of Physics, University of Konstanz, 78464 Konstanz, Germany, Department of Physics, University of Konstanz, 78464 Konstanz, Germany, Research Center for Non-Destructive Testing GmbH, Altenbergerstr. 96, 4040 Linz, Austria, Department of Physics, University of Konstanz, 78464 Konstanz, Germany, Department of Physics, University of Konstanz, 78464 Konstanz, Germany, Laboratoire d'Acoustique de l'Université du Mans (LAUM), UMR 6613, Institut d'Acoustique - Graduate School (IA-GS), CNRS, Le Mans Université, Av. O. Messiaen, 72085 Le Mans, France, Institute of Technical Physics, German Aerospace Center, Pfaffenwaldring 38-40, 70569 Stuttgart, Germany, Research Center for Non-Destructive Testing GmbH, Altenbergerstr. 96, 4040 Linz, Austria,

**16:45** **Towards designing of high efficient NIR-emitting OLEDs based on coordination compounds of Nd3+ ion with fluorinated pyrazole-sub** **U 5.6**

Ilya V. Taydakov, Mikhail T. Metlin, Dmitry O. Goryachii, Daria A. Metlina, Nikolay P. Datskevich, Roman I. Avetisov*
1 P.N. Lebedev Physical Institute of the Russian Academy of Sciences, 53 Leninsky Prospect, 119991 Moscow, Russian Federation 2Mendeleev Univeristy of Chemical Technology of Russia, 125047, Russia, Moscow, Miusskaya pl.9

**16:45** **Tunable synaptic behavior in lateral perovskite diodes** **U 5.7**

S. M. Sattari-Esfahlan*(1), Xuewen Liu (2), Eun-Cheol Lee (2), Chang-Hyun Kim (1)
(1) Department of Electronic Engineering, Gachon University, Seongnam, Republic of Korea (2) Department of Physics, Gachon University, Seongnam, Republic of Korea * lead presenter

**16:45** **Fabrication of polymer thin-film source-gated transistors** **U 5.8**

Hyuna Lee*, S. M. Sattari-Esfahlan, Chang-Hyun Kim * lead presenter
Department of Electronic Engineering, Gachon University, Seongnam, Republic of Korea

**16:45** **DUAL LABELLED CORE-SHELL POLYSTYRENE NANOPARTICLES WITH PLASMON-ENHANCE PROPERTIES AS A MODEL FOR MICROPLASTICS ASSESMENT** **U 5.9**

Oscar H. Moriones, Neus G. Bastús, Muriel Freixanet Gusta, Laura Mondragon, Victor Puntes.
Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Campus UAB, Bellaterra, 08193 Barcelona, Spain, Universitat Autònoma de Barcelona (UAB), Campus UAB, 08193, Bellaterra, Barcelona, Spain, Vall d?Hebron Institut de Recerca (VHIR), 08035, Barcelona, Spain, Institució Catalana de Recerca i Estudis Avançats (ICREA), P. Lluís Companys 23, 08010 Barcelona, Spain.

**16:45** **Probing the correlation between the morphology and the optical anisotropy of ZnTPP films** **U 5.10**

Rossella Yivlialin, Claudia Filoni, Alberto Calloni, Lorenzo Ferraro, Francesco Goto, Isheta Majumdar, Marco Finazzi, Lamberto Duò, Franco Ciccacci and Gianlorenzo Bussetti
Department of Physics, Politecnico di Milano, p.zza Leonardo da Vinci 32 - 20133 Milano (Italy)

**16:45** **-COOH-functionalized magnetite nanoparticles synthesized through a microfluidic lab-on-chip device** **U 5.11**

Cristina Chircov, Alexandru Mihai Grumezescu, Alexandra Catalina Birca, Anton Ficai, Bogdan Stefan Vasile, Ecaterina Andronescu
Department of Science and Engineering of Oxide Materials and Nanomaterials, Faculty of Applied Chemistry and Materials Science, University Politehnica of Bucharest

**16:45** **Luminescent hybrid powders in the PbF2-LaF3 and PbF2-YF3 systems with (8-hydroxyquinolate) lithium synthesized by the co-precipi** **U 5.12**

P.V. Strekalov1, M.N. Mayakova2, M.U. Andreeva1, K.I.Runina1, D.A. Butenkov1, O.B. Petrova1, I.R. Avetisov1, I.Ch. Avetissov1
1. Department of Chemistry and Technology of Crystals, D. Mendeleev University of Chemical Technology, MUCTR, Moscow, Russia 2. A.M.Prokhorov General Physics Institute RAS, GPI RAS, Moscow, Russia

**16:45** **Towards designing of high efficient NIR-emitting OLEDs based on coordination compounds of Nd3 ion with fluorinated pyrazole-sub** **U 5.13**

Ilya V. Taydakov1, Mikhail T. Metlin1, Dmitry O. Goryachii1, Daria A. Metlina1, Nikolay P. Datskevich1, Roman I. Avetisov2
1 P.N. Lebedev Physical Institute of the Russian Academy of Sciences, 53 Leninsky Prospect, 119991 Moscow, Russian Federation 2 Mendeleev Univeristy of Chemical Technology of Russia, 125047, Russia, Moscow, Miusskaya pl.9



**16:45** **The growth of Methylammonium lead iodide Perovskite Films: Studying the impact of Bromide Doping** **U 5.14**

Khawla Fradi a,b,c , Amal Bouich a, bechir slimi b, Bernabé Mari a , Radhouane Chtourou b
a Institut de Disseny i Fabricació, UniversitatPolitècnica.,València, Spain b Laboratoire de Nanomatériaux et Systèmes pour les Energies Renouvelables, Centre de Recherches et des Technologies l?Energie, Technopole BorjCedria, Bp 95, Hammam Lif 2050, Tunisia c Faculté des Sciences de Tunis, Université d?El Manar, Tunis, Tunisia

**16:45** **Novel two-chromophores copolymers for single-layer white OLEDs: optical, photophysical and electrooptical characterization** **U 5.15**

Despoina Tselekidou 1, Kyparisis Papadopoulos 1, Vasileios Kyriazopoulos 1,2, Konstantinos C. Andrikopoulos 3, Aikaterini K. Andreopoulou 3, Joannis K. Kallitsis 3, Argiris Laskarakis 1, Stergios Logothetidis 1, Maria Gioti 1
1 Nanotechnology Lab LTFN, Department of Physics, Aristotle University of Thessaloniki, GR-54124 Thessaloniki, Greece, 2 Organic Electronic Technologies P.C. (OET), Antoni Tritsi 21B, GR-57001 Thessaloniki, Greece, 3 Department of Chemistry, University of Patras, Caratheodory 1, University Campus, GR-26504 Patras, Greece,

**16:45** **A time-resolved spectro-electrochemistry study on IDTBT polymers** **U 5.16**

Isabelle Holzer, Priscila Cavassin, Natalie Banerji
Christian Nielsen

**16:45** **Vacuum Electrospray Deposition of Poly(3-hexylthiophene) Films** **U 5.17**

Shubham Bhagat, Ingo Salzmann
Department of Physics, Concordia University, Montreal, Canada, Department of Physics, Department of Chemistry and Biochemistry, Concordia University, Montreal, Canada,

**Tuesday may 31**

## Photophysics II : Sophia Hayes

**09:00** INV **Static disorder, dynamic disorder, wavefunction delocalisation &#8211, using optical spectroscopy to assess their influence on charge transfer states in organic solar cell materials** — U 6.1
F.-J. Kahle, A. Rudnick, S. Wedler, R. Saxena, R. Ammenhäuser, U. Scherf, S. Bagnich, H. Bässler, S. Athanasopoulos, A. Köhler
Soft Matter Optoelectronics, Universitätsstr. 30, Universität Bayreuth, 95448 Bayreuth, Soft Matter Optoelectronics, Universitätsstr. 30, Universität Bayreuth, 95448 Bayreuth, Soft Matter Optoelectronics, Universitätsstr. 30, Universität Bayreuth, 95448 Bayreuth, Soft Matter Optoelectronics, Universitätsstr. 30, Universität Bayreuth, 95448 Bayreuth, Macromolecular Chemistry Group (BUWMakro) and Wuppertal Institute for Smart Materials and Systems (CM@S), Bergische Universität Wuppertal, Gauss-Str. 20, 42119 Wuppertal, Macromolecular Chemistry Group (BUWMakro) and Wuppertal Institute for Smart Materials and Systems (CM@S), Bergische Universität Wuppertal, Gauss-Str. 20, 42119 Wuppertal, Soft Matter Optoelectronics, Universitätsstr. 30, Universität Bayreuth, 95448 Bayreuth, Bayreuth Institute of Macromolecular Research (BIMF), Universität Bayreuth, 95448 Bayreuth, Bayreuth Institute of Macromolecular Research (BIMF), Universität Bayreuth, 95448 Bayreuth, Soft Matter Optoelectronics, Bayreuth Institute of Macromolecular Research (BIMF), Bavarian Polymer Institute (BPI), Universität Bayreuth, 95448 Bayreuth

**09:30** **Revealing the Thermally Induced Degradation of PM6:Y6 based Bulk Heterojunction Organic Solar Cell** — U 6.2
Shahidul Alam, Hua Tang, Maryam Alqurashi, Wejdan Althobaiti, Si Chen, Jafar I. Khan, Frédéric Laquai*
King Abdullah University of Science and Technology (KAUST), KAUST Solar Center (KSC), Physical Sciences and Engineering Division (PSE), Material Science and Engineering Program (MSE), Thuwal 23955-6900, Kingdom of Saudi Arabia

**09:45** **Donor-acceptor polymer complex formation in solution behind highly efficient all-polymer solar cells** — U 6.3
Ishita Jalan (1), Cleber F.N. Marchiori (2), Zewdneh Genene (3), André Johansson (2), C. Moyses Araujo (2), Ergang Wang (3), Jan van Stam (1), Ellen Moons (2)
1. Department of Engineering and Chemical Sciences, Karlstad University, SE-65188 Karlstad, Sweden. 2. Department of Engineering and Physics, Karlstad University, SE-65188 Karlstad, Sweden. 3. Department of Chemistry and Chemical Engineering, Chalmers University of Technology, SE-412 96 Göteborg, Sweden.

**10:00** **Efficient Exploration of the Composition Space in Ternary Organic Solar Cells by Combining High-Throughput Material Libraries an** — U 6.4
Albert Harillo-Baños, Xabier Rodríguez-Martínez, Mariano Campoy-Quiles
Institute of Material Science of Barcelona (ICMAB-CSIC)

**10:15** **Unravel the Thermal/Voltage Dependent Trapped Carrier Dynamics in Perovskite Solar Cells via Pump-Push-Photocurrent Spectroscopy** — U 6.5
Beier Hu, Jiaxin Pan, Ziming Chen, Thomas Macdonald, Artem A. Bakulin
Imperial College London

**10:30** **Discussion**

**10:45**

## Spectroscopy I : Martin Brinkmann

**11:00** INV **Impedance spectroscopy of halide perovskite solar cells captures the hysteresis effects** — U 7.1
Juan Bisquert
Institute of Advanced Materials, Universitat Jaume I, Castelló, Spain.

**11:30** **X-ray Nanoanalysis on Perovskite Thin Film: fluorescence and XBIC mapping** — U 7.2
Matteo Verdi(1,2), Jaime Segura-Ruiz(3), Andrea Ciavatti(1,2), Laura Basiricò(1,2), Annamaria Petrozza(4), Federico Boscherini(1) and Beatrice Fraboni(1,2)
(1) Department of Physics and Astronomy, University of Bologna, Bologna, Italy. (2) National Institute for Nuclear Physics INFN, Bologna, Italy. (3) ID16B ? ESRF: The European Synchrotron, 71 avenue des Martyrs, 38043 Grenoble, France. (4) Center for Nano Science and Technology PoliMi, Istituto Italiano di Tecnologia, 20133 Milano, Italy.

**11:45** **Tracing Trapped Carrier Dynamic in Perovskite Solar Cell Via IR Optical Activation Spectroscopy** — U 7.3
Jiaxin Pan, Ziming Chen, Tiankai Zhang, Feng Gao, Artem Bakulin
Imperial College London



**12:00** **Discussion**

**12:15** **Lunch**

**13:45** **Plenary 1 +**

## Structure and Properties I : Ingo Salzmann

**15:00** **Thin Film Structure of the Asymetric Ph-BTBT-10 Molecule for Application in Organic Thin Film Transistors** — U 8.1
Sebastian Hofer, Andreas Hofer, Johanna Unterkofler, Wolfgang Bodlos, Adrián Tamayo, Tommaso Salzillo, Marta Mas-Torrent, Michael Ramsey, Jiri Novak, Alessandro Sanzone, Luca Beverina, Yves Henry Geerts, Roland Resel
Institute of Solid State Physics, Graz University of Technology, Austria, Institut de Ciència de Materials, Universitat Autònoma de Barcelona, Spain, Institute of Physics, Karl-Franzens University Graz, 8010 Graz, Austria, Department of Materials Science, University of Milano-Bicocca, Italy, Department of Condensed Matter Physics, Masaryk University, Brno, Czech Republic, Laboratoire de Chimie des Polymères, Universite? Libre de Bruxelles, Belgium,

**15:15** **Operando studies of morphological degradation in polymer-based organic solar cells** — U 8.2
Peter Müller-Buschbaum
Lehrstuhl fu?r Funktionelle Materialien, Physik-Department, Technische Universita?t Mu?nchen, James-Franck-Str. 1, 85748 Garching, Germany

**15:30** **Thickness hindered crystallization and two-step nucleation followed by x-ray scattering and Vis spectroscopy** — U 8.3
J. Rozbo?il, K. Broch, R. Resel, O. Caha, F. Münz, P. Mikulík, J.E. Anthony, H. Sirringhaus, and J. Novák
J. Rozbo?il, O. Caha, F. Münz, P. Mikulík, J. Novák - Department of Condensed Matter Physics, Masaryk University, Kotlá?ska 2, 61137 Brno, Czech Republic, K. Broch - Institute for Applied Physics, Eberhard-Karls Universität Tübingen, Auf der Morgenstelle 10, Germany, R. Resel - Institute of Solid State Physics, Graz University of Technology, Petersgasse 16, 8010 Graz, Austria, J.E. Anthony - Department of Chemistry, University of Kentucky, Lexington, Kentucky 40506, USA, H. Sirringhaus - Cavendish Laboratory, University of Cambridge, JJ Thomson Avenue, Cambridge CB3 0HE, UK

**15:45** **Conjugated polymer-cellulose hybrid materials ? correlating nanostructure and electronic functionality** — U 8.4
Roth, S. V.*(1,2), Brett, C. J. (1,2), Månsson, M.(2), Frielinghaus, H.(3), Porcard, L.(4), Müller-Buschbaum, P.(5,6), Söderberg, L.D.(2)
(1)Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany, (2)KTH Royal Institute of Technolo-gy, Stockholm, Sweden, (3)Jülich Centre for Neutron Science JCNS, Garching, Germany, (4)Institut Laue-Langevin ILL, Grenoble, France, (5) Lehrstuhl für Funktionelle Materialien, Physik-Department, TU München, Garching, Germany, (6)Heinz-Maier-Leibniz-Zentrum MLZ, TU München, Garching, Germany

**16:00** **Study of Polymorph Tuning at the Surfaces in an Organic Semiconductor** — U 8.5
Ann Maria James*?, Lara Gigli+, Nicola Demitri+,Yves H. Geerts?, Roland Resel?
? Institute of Solid State Physics, Graz University of Technology, Petersgasse 16, 8010 Graz,Austria ? De?partement de Physique, Faculte?des Sciences, Universite?Libre de Bruxelles CP223, Campus de la Plaine, 1050 Brussels, Belgium +Elettra-Sincrotrone Trieste, S.S. 14 Km 163.5 in Area Science Park, 34149 Basovizza-Trieste, Italy

**16:15** **Discussion**

**16:30**

## Structure and Properties II : Emanuele Orgiu

**16:45** INV **AFM-IR reveals chemical composition in emerging PV materials** — U 9.1
Leticia Christopholi [1], Ishita Jalan [2], Zafer Hawash [1], Leif Ericsson[1], Jan van Stam[2], Ellen Moons [1]
1. Department of Engineering and Physics, Karlstad University, SE-65188 Karlstad, Sweden. 2. Department of Engineering and Chemical Sciences, Karlstad University, SE-65188 Karlstad, Sweden.

**17:15** **The Added Value of Circular Dichroism to Study Excitons in Photoactive Organic Semiconductor Thin Films** **U 9.3**

M. F. Schumacher (1), T. G. Nguyen (1), J. Zablocki (1), A. Lützen (1), N. J. Hestand (2), F. Balzer (3), K. Hingerl (4), M. Schiek (4).
(1) University of Bonn, Germany, (2) Evangel University, Springfield Missouri, USA, (3) University of Southern Denmark, Sonderborg, Denmark, (4) Johannes Kepler University Linz, Austria.

**17:30** INV **Linking microstructure to transport in soft materials: the importance of lengthscales** **U 9.4**

Alberto Salleo
Stanford University, Dept. of Materials Science and Engineering



**Wednesday june 1**

## Thermoelectrics : Giovanni Costantini

**09:00** INV **Thermal conductivty measurement in thin organic and perovskite films** **U 10.1**

Dr Oliver Fenwick
School of Engineering and Materials Science, Queen Mary University of London, UK.

**09:30** **Improving the thermoelectric performance of polymer semiconductors through mixing.** **U 10.2**

Osnat Zapata-Arteaga.1, Sara Marina2, Guangzheng Zuo.3, Kai Xu.1, Bernhard Dörling1, Luis Alberto Pérez1, Juan Sebastián Reparaz1, Jaime Martín2,4,5, Martijn Kemerink6,7, and Mariano Campoy-Quiles1,?
1 Institute of Materials Science of Barcelona (ICMAB-CSIC). Campus UAB08193 Bellaterra, Spain, 2 POLYMAT and University of the Basque Country. Av Tolosa 72, 2018, Spain, 3 Institute for Physics and Astronomy, University of Potsdam. 14476 Potsdam-Golm, Germany, 4 Grupo de Polímeros, Centro de Investigacións Tecnolóxicas (CIT). Universidade da Coruña, Esteiro, 15471 Ferrol, Spain, 5 Ikerbasque, Basque Foundation for Science. 48013 Bilbao, Spain, 6 Centre for Advanced Materials, Heidelberg University. Im Neuenheimer Feld 225, 69120 Heidelberg, Germany., 7 Division of Electronics and Photonic Materials, Department of Physics, Chemistry and Biology. Linköping University, Linköping, Sweden.

**09:45** **In-situ investigation of thermoelectric thin films based on ionic liquid post-treated PEDOT:PSS** **U 10.3**

Anna Lena Oechsle (1), Julian E. Heger (1), Nian Li (1), Shanshan Yin (1), Sigrid Bernstorff (2) & Peter Müller-Buschbaum (1,3)
(1) Technische Universität München, Physik-Department, Lehrstuhl für Funktionelle Materialien, James-Franck-Str. 1, Garching, Germany (2) Elettra-Sincrotrone Trieste S.C.p.A., Strada Statale 14 km 163.5, AREA Science Park, Basovizza 34149, Italy (3) Heinz Maier-Leibnitz Zentrum (MLZ), Lichtenbergstr. 1, 85748 Garching, Germany

**10:00** **Discussion U.9 & U.10**

**10:15**

## Advanced Devices : Oliver Fenwick

**11:00** INV **2D layered perovskite micro-crystalline flexible films as direct X-ray radiation detectors** **U 11.1**

Andrea Ciavatti(1,2), Ferdinand Lédée (1), Matteo Verdi (1,2), Laura Basiricò (1,2), and Beatrice Fraboni (1,2)
1- Department of Physics and Astronomy, University of Bologna, Viale Berti Pichat 6/2, 40127 Bologna, Italy 2 - National Institute for Nuclear Physics ? INFN section of Bologna, Viale Berti-Pichat 6/2, Bologna 40127, Italy

**11:30** **New composite based on SnO2 nanoparticles?P3HT:PC71BM co-polymer blend, as absorber in bulk heterojunction photovoltaic cells** **U 11.2**

Alina Irina RADU (1,2), Vlad-Andrei ANTOHE (2,3), Sorina IFTIMIE (2), Iulia ANTOHE (1), Mihaela FILIPESCU (1), Adrian RADU (2), Diana COMAN (2), Maria Luiza STINGESCU (2), Elena-Isabela BANCU (1), Maria DINESCU (1), Stefan ANTOHE (2,4,*)
(1) National Institute for Lasers, Plasma and Radiation Physics (INFLPR), Atomistilor Street 409, 077125 Magurele, Ilfov, Romania, (2) University of Bucharest, Faculty of Physics, R&D Center for Materials and Electronic & Optoelectronic Devices (MDEO), Atomistilor Street 405, 077125 Magurele, Ilfov, Romania, (3) Université catholique de Louvain (UCLouvain), Institute of Condensed Matter and Nanosciences (IMCN), Place Croix du Sud 1, B-1348 Louvain-la-Neuve, Belgium, (4) Academy of Romanian Scientists (AOSR), Splaiul Independentei 54, 050094 Bucharest, Romania, *Corresponding author: santohe@fizica.unibuc.ro (S. ANTOHE), Contact author: vlad.antohe@fizica.unibuc.ro (V. A. ANTOHE).

**11:45** **Chemical doping of a porous n-type polymeric film prepared by a Langmuir-Schaefer approach** **U 11.3**

Stoeckel, M.-A.*(1), Wu, H.-Y.(1), Lu, Y.(2), Yang, C.-Y.(1), Wu, Z.(3), Woo, H.Y.(3), Pei, J.(2), Berggren, M.(1), Fabiano, S.(1)
(1) Laboratory of Organic Electronics, Department of Science and Technology, Linköping University, Norrköping, Sweden (2) Beijing National Laboratory for Molecular Sciences (BNLMS), Key Laboratory of Bioorganic Chemistry and Molecular Engineering of Ministry of Education, Key Laboratory of Polymer Chemistry and Physics of Ministry of Education, Center of Soft Matter Science and Engineering, College of Chemistry and Molecular Engineering, Peking University, Beijing, 100871 China (3) Department of Chemistry, College of Science, Korea University, Seoul, 136-713, Republic of Korea

**12:00** **Discussion**

## Photophysics III : Andrew Musser

**15:00** INV **Disentangling the excited state dynamics of conjugated polyelectrolytes self-assembled with ss-DNA with a direct molecular probe** — U 12.1
Eliana Nicolaidou, Anthony W. Parker, Mike Towrie, Sophia C. Hayes*
Dept. of Chemistry, Univ. of Cyprus, Central Laser Facility, Rutherford Appleton Laboratory

**15:30** **Understanding Photocapacitive and Photofaradaic Processes at the Organic Semiconductor/Water Interface for Biophotomodulation** — U 12.2
Luca Bondi , Beatrice Fraboni , Tobias Cramer
University of Bologna , University of Bologna , University of Bologna

**15:45** **Multilayer thickness evaluation of semiconductor and display structures by picosecond ultrasonics** — U 12.3
Frederic FAESE, Julien MICHELON, Xavier TRIDON
Neta, Neta, Neta

**16:00** **A new bulky molecular p-dopant for organic semiconductors** — U 12.4
Somaiyeh Charoughchi, Hannes Hase, Jiang Tian Liu, Mohammad Askari, Venelin Petkov, Pat Forgione, Ingo Salzmann
Department of Chemistry and Biochemistry, Concordia University, Montreal, Canada, Department of Physics, Concordia University, Montreal, Canada, Department of Chemistry and Biochemistry, Concordia University, Montreal, Canada, Department of Chemistry, University of Toronto, Toronto, Canada, Department of Chemistry and Biochemistry, Concordia University, Montreal, Canada, Department of Chemistry and Biochemistry, Concordia University, Montreal, Canada, Department of Chemistry and Biochemistry, Concordia University, Montreal, Canada, Department of Physics, Department of Chemistry and Biochemistry, Concordia University, Montreal, Canada,

**16:15** **Discussion**



**Thursday june 2**

## Spectroscopy II : Steffen Duhm

**09:00** INV **Full description of the electronic structure of organic single crystal: rubrene** — U 13.1
Satoshi Kera
Institute for Molecular Science, Myodaiji, Okazaki 4448585, Japan

**09:30** **Operando XPS Investigation of Chemical State and Electronic Structure of MoTe2 Field-effect-transistor Depending on Channel Char** — U 13.2
Seungwook Choi, Guen Hyung Oh, Songwoung Hong, TaeWan Kim, Ansoon Kim
Operando Methodology and Measurement Team, Interdisciplinary Materials Measurement Institute, Korea Research Institute of Standards and Science (KRISS), Daejeon 34113, South Korea, Department of Nano Science, University of Science and Technology (UST), Daejeon 34113, South Korea, Department of Electrical Engineering and Smart Grid Research Center, Jeonbuk National University, Jeonju, 54896, South Korea

**09:45** **Trap States Ruling Photoconductive Gain in Tissue-Equivalent, printed Organic X-Ray Detectors** — U 13.3
Ilaria Fratelli (1,2), Laura Basiricò (1,2), Andrea Ciavatti (1,2), John Anthony (3), Ioannis Kymissis (4) and Beatrice Fraboni (1,2)
1) Department of Physics and Astronomy, University of Bologna, Bologna, Italy 2) National Institute of Nuclear Physics (INFN), Section of Bologna, Bologna, Italy 3) University of Kentucky, Center for Applied Energy Research, United States 4) Department of Electrical Engineering, Columbia University, New York, New York 10027, United States

**10:00** **Material Authoring and Relationship Analysis System for High-Performance Properties Material Discovery.** — U 13.4
Imran , Do-Hyeun Kim, Bong Seon Jong, Su-Young Chi, and Choi Yo Han
Department of Computer Engineering, Jeju National University, Jeju 63243, Korea , Korea University of Science and Technology, 21 7,Gajeong-ro,Youseong-gu, Daejeon, Korea, Electronics and Telecommunications Research Institute, Dajeon,305-370, Korea,

**10:15** **Discussion**

**10:30**

## Advanced Microscopies 2 : Steffen Duhm

**11:00** INV **Investigating dopant intercalation into polymer semiconductors by TEM, Rutherford Backscattering and polarized spectroscopy** — U 14.1
Yuhan Zhong (1,2), Shubhradip Guchait (1), Viktoriia Untilova (1), Laurent Herrmann (1), Dominique Müller (2), Céline Kiefer (3),Thomas Heiser (2), Martin Brinkmann (1)
(1) Université de Strasbourg, CNRS, ICS UPR 22, F-67000 Strasbourg, France (2) Université de Strasbourg, CNRS , ICUBE UMR 7357, F-67000, Strasbourg, France (3) Université de Strasbourg, CNRS, IPCMS UMR 7504, F-67087 Strasbourg, France

**11:30** **Advanced scanning probe microscopy to probe early-stage degradation mechanisms in tri-cation organic-inorganic halide perovskite** — U 14.2
Filipe Richheimer1,2, David Toth3,4, Bekele Hailegnaw5,6, Mark A. Baker2, Robert A. Dorey2, Ferry Kienberger3, Fernando A. Castro1, Martin Kaltenbrunner6, Markus C. Scharber5, Georg Gramse3,4, Sebastian Wood1
1National Physical Laboratory, Teddington, Middlesex, TW11 0LW, UK, 2Centre for Engineering Materials, University of Surrey, Guildford, GU2 7XH, UK, 3Keysight Technologies GmbH, Linz, 4020, Austria, 4Applied Experimental Biophysics, Johannes Kepler University, Linz, 4020, Austria, 5Linz Institute for Organic Solar Cells, Johannes Kepler University, Linz, 4040, Austria, 6Department Soft Matter Physics, Johannes Kepler University Linz, 4040, Austria

**11:45** **Advanced microscopy methods for structural characterization of soft materials** — U 14.3
Nadezda Prochukhan, Michael A. Morris.
Nadezda Prochukhan - School of Chemistry, CRANN and AMBER Research Centres, Trinity College Dublin, College Green, Dublin 2, Ireland, BiOrbic?Bioeconomy SFI Research Centre, University College Dublin, Belfield, Dublin 4, Ireland, Michael A. Morris - School of Chemistry, CRANN and AMBER Research Centres, Trinity College Dublin, College Green, Dublin 2, Ireland, BiOrbic?Bioeconomy SFI Research Centre, University College Dublin, Belfield, Dublin 4, Ireland.

**12:00** **Discussion and Closing Remarks**

E-MRS European Materials Research Society
Spring Meeting 2022
May 30 | June 3
Virtual Conference

# SYMPOSIUM V

## New trends in advanced lithography and pattern transfer methods

*Symposium Organizers :*

Flavio CARSUGHI, Forschungszentrum Jülich GmbH. Jülich Centre for Neutron Science at MLZ

Francesc PEREZ-MURANO, Institute of Microelectronics of Barcelona (IMB-CNM, CSIC)

Ivan MAXIMOV, Advanced Lithography Group, Lund Nano Lab, Division of Solid State Physics

Yasin EKINCI, Laboratory for Micro and Nanotechnology

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## Monday may 30

**13:15** **Welcome and Introduction to the Symposium**

### Presentation 1 : Yasin Ekinci, Ivan Maximov

**13:30** INV **NFFA-Europe Pilot: a great research and innovation opportunity for the European and worldwide nanoscience community.** V 1.1
Flavio Carsughi
Forschungszentrum Jülich, Germany

**13:45** INV **Fully Automated Thermal Scanning Probe Lithography for FET Batch Fabrication** V 1.2
A. Knoll 1 , J. Chaaban 2 , N. Hendricks 2 , E. Cagin 2 , P. Nicollier 1 , H. Wolf 1 , D. Widmer 1 , U. Drechsler 1
1) IBM Research Europe – Zurich, Säumerstrasse 4, 8803 Rüschlikon, Switzerland
2) Heidelberg Instruments Nano AG, Bändliweg 30, 8048 Zürich, Switzerland

**14:15** **Towards the fabrication of Silicon Nanowires with Quantum Dot as a Platform for experimentation in Quantum Tecnologies** V 1.3
J Llobet, D Bricio, A Kapas, A Guerrero, J Sanchez, A Garcia, M Duch, X Borrisé, J Bausells, F Pérez-Murano
Institute of Microelectronics of Barcelona (IMB-CNM CSIC), Bellaterra, 08193, Catalonia, Spain Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Bellaterra, 08193, Catalonia, Spain

**14:30** **Molecular Gates: Unlocking the Path to High-Resolution Patterning of Doping and Microstructure in Molecular Semiconductor Films** V 1.4
Aleksandr Perevedentsev, Mariano Campoy-Quiles
Institute of Materials Science of Barcelona (ICMAB-CSIC), 08193 Bellaterra, Spain

**14:45** **Q&A**

**15:00** INV **Beyond Gallium: FIB based local materials property tuning with advanced ion sources** V 1.5
Gregor Hlawacek
Institute for Ion Beam Physics and Materials Research Helmholtz—Zentrum Dresden—Rossendorf 01328 Dresden, Germany

**15:30** INV **Using a Liquid Metal Alloy Ion Source for FIB patterning of noble metal plasmonic nanostructures.** V 1.6
D. Giubertoni (a), A. Cian (a), E. Scattolo (a), R. Dell'Anna (a), G. Paternoster (a), J. Rodríguez-Álvarez (b,c), A. Guerrero (d), X. Borrisé (e), F. Perez-Murano (d)
(a) Sensors and Devices Center, Bruno Kessler Foundation, Trento, I-38123, Italy, (b) Departament de Física de la Matèria Condensada, Universitat de Barcelona, 08028 Barcelona, Spain, (c) Institut de Nanociència i Nanotecnologia (IN2UB), 08028 Barcelona, Spain, (d) Instituto de Microelectrónica de Barcelona (IMB-CNM, CSIC), Bellaterra (Barcelona), 08193, Spain, (e) Institut Català de Nanociència i Nanotecnologia, Bellaterra (Barcelona), 08193, Spain

**16:00** **Fabrication of X-ray optical elements by two-photon polymerization 3D printing** V 1.7
Sanli, U. T.(1)*,‡, Kubec, A.†(1,2), Qi, P.(1), Seiboth, F.(3), Vila-Comamala, J.(1) & David, C.(1)
(1) Paul Scherrer Institute, Forschungsstrasse 111, 5232 Villigen PSI, Switzerland (2) XRnanotech GmbH, Forschungsstrasse 111, 5232 Villigen PSI, Switzerland (3) CXNS - Center for X-ray and Nano Science, Deutsches Elektronen-Synchrotron DESY, Notkestraße 85, 22607 Hamburg, Germany * Lead presenter. ‡ Project received funding from European Union's Horizon 2020 research and innovation pro-gramme under the Marie Skłodowska-Curie grant agreement No 884104 (PSI-FELLOW-III-3i) † Industry partner: https://www.xrnanotech.com/

**16:15** **Latest results on radiation assisted nanomaterials synthesis and patterning using Deep X-ray lithography** V 1.8
B. Marmiroli (1), A. Turchet (2), B. Sartori (1), A. Bharti (2), H. Amenitsch (1)
(1) Institute of Inorganic Chemistry, Graz University of Technology, Graz, Austria, (2) Elettra-Sincrotrone Trieste, Trieste, Italy

**16:30** **Diamond optics for X-ray free-electron laser applications** V 1.9
Mamyrbayev, T.(1)*, Vila-Comamala, J.(1), Li, H.(2), Makita, M. (3), Zhu, D.(2) & David, C.(1)
(1) Paul Scherrer Institut, 5232 Villigen PSI, Switzerland (2) Linac Coherent Light Source, SLAC National Accelerator Laboratory, Menlo Park, California 94025, USA (3) European XFEL GmbH, Holzkoppel 4, 22869 Schenefeld, Germany

**16:45** **Q&A**



### 1 : Flavio Carsughi

**17:15** **Edge-contact MoS2 transistors made by thermal scanning probe lithography** V 2.1
Ana Conde-Rubio, Xia Liu*, Giovanni Boero, Juergen Brugger
Microsystems Laboratory, École Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

**17:15** **Flexible PMMA Stencil Lithography for 2D Materials Contacting** V 2.2
Xia Liu, Giovanni Boero, Juergen Brugger
Microsystems Laboratory, École Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

**17:15** **Fabrication and performance of graphene FETs based on single crystal flakes transferred from SiC wafers and a crosslinked PMMA** V 2.3
Sofia Aslanidou, Elif Ozceri, Alberto Garcia-Garcia, Philippe Godignon, Gemma Rius
Institute of Microelectronics of Barcelona, IMB-CNM-CSIC (Spain)

**17:15** **Negative-tone dry development of PMMA for e-beam lithography** V 2.4
Furkan Ayhan, Thomas Mortelmans, Yasin Ekinci, Dimitrios Kazazis
Paul Scherrer Institute, 5232 Villigen, Switzerland, Ecole Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland, Swiss Nanoscience Institute, University of Basel, 4056 Basel, Switzerland, Centre Suisse d'Électronique et de Microtechnique, 2002 Neuchâtel, Switzerland

**17:15** **Direct Nanoimprint on Chalcogenide Glasses substrate for Optical Applications** V 2.5
Sivan Tzadka(1,2), Natali Ostrovsky(1,2), Esti Toledo(1,2), G. Le Saux(1,2), Evyatar. Kassis(3), Shay Joseph(3), and Mark Schvartzman(1,2)
1.Department of Materials Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel 2. Ilse Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, Beer-Sheva, Israel 3. Optical Component Center, Rafael Advanced Defense Systems, Haifa, Israel

**17:15** **Integration by Focused Ion Beam of plasmonic nanostructures on Si-based device for UV light detection** V 2.6
E. Scattolo (a,b), A. Cian (a), D. Giubertoni (a), G. Paternoster (a), L. Petti (b), P. Lugli (b)
(a) Sensors and Devices Center, Bruno Kessler Foundation, Trento, I-38123, Italy, (b) Free university of Bozen, 39100 Bolzano BZ, Italy

**17:15** **High aspect ratio fabrication by displacement Talbot lithography, silicon deep reactive ion etching and gold electroplating** V 2.7
Konstantins Jefimovs1, Zhitian Shi1,2, Lucia Roimano1,2,3, Craig Lawley1, Daniel Josell4, Vitaliy A. Guzenko1, Marco Stampanoni1,2
1Photon Science Division, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland 2Institute for Biomedical Engineering, University and ETH Zürich, 8092 Zürich, Switzerland 3Department of Physics and CNR-IMM- University of Catania, 64 via S. Sofia, Catania, Italy 4Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, Maryland 20899, USA

**17:15** **Investigation of interfacial widths and line-edge roughnesses in microphase separated cylindrical block copolymer thin films** V 2.8
Julius Bürger, Harikrishnan Venugopal, Daniel Kool, Teresa de los Arcos, Alejandro González Orive, Guido Grundmeier, Katharina Brassat, Jörg K.N. Lindner
Nanostructuring, Nanoanalysis and Photonic Materials Group, Dept. of Physics, Paderborn University, Paderborn, Germany, Nanostructuring, Nanoanalysis and Photonic Materials Group, Dept. of Physics, Paderborn University, Paderborn, Germany, Nanostructuring, Nanoanalysis and Photonic Materials Group, Dept. of Physics, Paderborn University, Paderborn, Germany, Technical and Macromolecular Chemistry, Dept. of Chemistry, Paderborn University, Paderborn, Germany, Institute of Materials and Nanotechnology, Universidad de La Laguna, Santa Cruz de Tenerife, Spain, Technical and Macromolecular Chemistry, Dept. of Chemistry, Paderborn University, Paderborn, Germany, Nanostructuring, Nanoanalysis and Photonic Materials Group, Dept. of Physics, Paderborn University, Paderborn, Germany, Nanostructuring, Nanoanalysis and Photonic Materials Group, Dept. of Physics, Paderborn University, Paderborn, Germany

**17:15** **EUV resist development with interference lithography** V 2.9
T. Allenet, M. Vockenhuber, C-K. Yeh, Y. Ekinci, D. Kazazis
Laboratory for X-ray Nanoscience and Technologies, Paul Scherrer Institut, 5232 Villigen-PSI, Switzerland

**17:15** **Grayscale e-beam lithography for the fabrication of 3D microfluidic devices** V 2.10
Thomas Mortelmans, Dimitrios Kazazis, Celestino Padeste, Xiaodan Li, Per Magnus Kristiansen, Yasin Ekinci
Paul Scherrer Institute, 5232 Villigen-PSI, Switzerland, Swiss Nanoscience Institute, University of Basel, 4056 Basel, Switzerland, INKA Institute of Polymer Nanotechnology, FHNW, 5210 Windisch, Switzerland, University College Dublin, Belfield, Dublin 4, Ireland

**17:15** **Single-digit nanometer EUV interference lithography** **V 2.11**
I. Giannopoulos, Y. Ekinci, D. Kazazis
Laboratory for X-ray Nanoscience and Technologies, Paul Scherrer Institute, 5232 Villigen PSI, Switzerland

**17:15** **Dopant patterning using monolayer doping and EUV interference lithography** **V 2.12**
Prajith Karadan, Dimitrios Kazazis, Yasin Ekinci
Paul Scherrer Institute, 5232 Villigen PSI, Switzerland

**17:15** **Fabrication of 1T-TaS2 devices by electron beam lithography for investigation of non-equilibrium phase switching** **V 2.13**
C. Burri *(1),(2), J. Ravnik (1), D. Kazazis (1), D. Mihailovic (3), Y. Ekinci (1), S. Gerber (1)
(1)Laboratory for X-ray Nanoscience and Technology, Paul Scherrer Institut, Villigen PSI, Switzerland (2)Laboratory for Solid State Physics, ETH Zurich, Zurich, Switzerland (3)Department of Complex Matter, Jožef Stefan Institute, Ljubljana, Slovenia

**17:15** **Formulating a Dose Insufficiency Model for High-Resolution 50 kV Electron-Beam Lithography on Thick Resist Layers** **V 2.14**
Mattias Åstrand, Thomas Frisk, Hanna Ohlin, Ulrich Vogt
KTH Royal Institute of Technology

**17:15** **Metal Cupferrates as Novel High Resolution Molecular Resists for Electron Beam and Extreme Ultraviolet Lithographies** **V 2.15**
M. S. M. Saifullah, D. Kazazis, V. A. Guzenko, M. Vockenhuber, Y. Ekinci
Paul Scherrer Institute, 5232 Villigen, Switzerland



**Tuesday may 31**

**Presentation 2 : Francesz Perez Murano**

**09:00** INV **EUV lithography for more Moore** **V 3.1**
Yasin Ekinci
Paul Scherrer Institut

**09:30** **Al2O3 dot and antidot arrays fabricated by SIS in hexagonally packed PS-b-PMMA BCP thin films** **V 3.2**
G. Seguini 1, A. Motta 1, M. Bigatti 1, F.E. Caligiore 1, G. Rademaker 2, A. Gharbi 2, R. Tiron 2, G. Tallarida 1, E. Cianci 1, and M. Perego 1
1 IMM-CNR, Unit of Agrate Brianza, Via C. Olivetti 2, I-20864 Agrate Brianza, Italy
2 Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France

**09:45** **Controlled, Rapid Synthesis of Microporous Polystyrene Thin Films** **V 3.3**
Philip Darragh, Dr. Ryan Enright, Prof. Michael Morris
AMBER, CRANN Institute, Trinity College Dublin, Dublin 2, Ireland, Nokia Bell Labs, Murray Hill, New Jersey, USA

**10:00** INV **Multi-Trigger Resist for EUV Lithography** **V 3.4**
C. Popescu(a), G. O'Callaghan(a), A. McClelland(a), J. Roth(b), E. Jacksonb, A.P.G. Robinson(a),(b)
(a) Irresistible Materials, Birmingham Research Park, Birmingham, UK (b) Nano-C, 33 Southwest Park, Westwood, MA, USA. e-mail: a.p.g.robinson@bham.ac.uk

**10:30** **NANOIMPRINT AS A LARGE-AREA NANOFABRICATION TECHNIQUE FOR DEVELOPING NOVEL ARCHITECTURES IN FLEXIBLE ULTRATHIN SOLAR CELLS** **V 3.5**
T.S. Lopes 1,2,3,4, J.P. Teixeira1, B.R. Ferreira1, M.A. Curado1,5, J.M.V. Cunha1,6,7, K. Oliveira1, A.J.N. Oliveira1,6,7,A.Violas1,6,7,8, J.R.S. Barbosa1, P.C. Sousa1, I.Çaha1 J. Borme1, J. Ring9, W.C. Chen8, Y. Zhou9, F.L. Deepak1 ,M. Edoff8, G. Brammertz2,3,4, P.A. Fernandes1,7,10, B. Vermang2,3,4, P.M.P. Salomé1,6
1-INL – International Iberian Nanotechnology Laboratory, Avenida Mestre José Veiga, 4715-330 Braga, Portugal 2-Institute for Material Research (IMO), Hasselt University (partner in Solliance), Agoralaangebouw H, Diepenbeek, 3590, Belgium 3-Imec division IMOMEC (partner in Solliance), Wetenschapspark 1, 3590 Diepenbeek, Belgium 4-EnergyVille, ThorPark, Poort Genk, 8310 & 8320, 3600 Genk, Belgium 5- CFisUC, Department of Physics, University of Coimbra, P-3004-516 Coimbra, Portugal 6-Departamento de Física, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal 7-i3N, Universidade de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal 9- Ångström Laboratory, Department of Engineering Sciences, Uppsala University, 751 21 9 -Obducat AB, Medicon Village, 223 63 Lund Sweden Uppsala, Sweden 10-CIETI, Departamento de Física, Instituto Superior de Engenharia do Porto, Instituto Politécnico do Porto, 4200-072, Porto Portugal

**10:45** **Q&A**

**11:00**

**11:15** INV **Bio-inspired directed self assembly as patterning solution: when Topdown meets bottom-up** **V 3.6**
Raluca Tiron
Univ. Grenoble Alpes, CEA, LETI

**11:45** **Soft nanoimprint lithography of silica sol gel for microelectronic and biological applications** **V 3.7**
David Sánchez-Fuentes* (1), R.Rathar (2), L. Picas (2), A. Carretero-Genevrier. (1)
(1) Institut d'Electronique et des Systemes (IES), CNRS, Université de Montpellier, 860 Rue de Saint Priest 34095 Montpellier, France (2) Institut de Recherche en Infectiologie de Montpellier (IRIM), CNRS, 1919 Route de Mende, 34090 Montpellier, France * lead presenter

**12:00** **Laser 3D nanolithography for sub-100 nm additive manufacturing of inorganics** **V 3.8**
Greta Merkininkaitė, Darius Gailevičius, Simas Sakirzanovas, Mangirdas Malinauskas
1. Faculty of Chemistry and Geosciences, Vilnius University, Naugarduko Str. 24, Vilnius LT-03225, Lithuania 2. Femtika, Sauletekio Ave. 15, Vilnius LT-10224, Lithuania 3. Laser Research Center, Physics Faculty, Vilnius University, Sauletekio Ave. 10, Vilnius LT-10223, Lithuania 4. Department of Chemical Engineering and Technology, Center for Physical Sciences and Technology, Sauletekio Ave. 3, Vilnius LT-10257, Lithuania

**12:15** **Bringing electrochemical 3D printing to the nanoscale** **V 3.9**

Dmitry Momotenko
Department of Chemistry, Carl von Ossietzky University of Oldenburg, Oldenburg, D-26129, Germany

**12:30** **Q&A and closing remarks**

E-MRS European Materials Research Society

Spring Meeting 2022

May 30 | June 3

Virtual Conference

# SYMPOSIUM W

## WiRE: Women in Renewable Energy

*Symposium Organizers :*

Monica LIRA-CANTU, Catalan Institute of Nanoscience and Nanotechnology

Zakya H. KAFAFI, Lehigh University

**Thursday june 2**

**08:15** Welcome to WiRE 2022 - Monica Lira-Cantu

**08:45** INV **Optical property, photoexcited carrier dynamics and application to solar cells of phase stable and less-defect perovskite nanocr** W .1
Qing Shen*, Chao Ding, Hua Li, Yusheng Li, Shota Yajima
1. The University of Electro-Communications, Tokyo, 182-8585, Japan. Email: shen@pc.uec.ac.jp

**09:15** INV **Efficient and stable metal halide perovskite solar cells** W .2
Huanping Zhou 1*
1. School of Materials Science and Engineering, Peking University, Beijing 100871, P. R. China. Email: happy_zhou@pku.edu.cn

**09:45** **Reversible Pressure-Dependent Mechanochromism in Layered Hybrid Perovskites** W .3
Loreta A. Muscarella,1, ‡ Algirdas Dučinskas,2,5 ‡ Mathias Dankl,3 Michał Andrzejewski,4 Nicola Pietro Maria Casati,4 Ursula Rothlisberger,3 Joachim Maier,5 Michael Graetzel,2 Bruno Ehrler,1,* Jovana V. Milić2,6*
1. Center for Nanophotonics, AMOLF, Science Park 104, 1098 XG Amsterdam, the Netherlands 2. Laboratory of Photonics and Interfaces, Institute of Chemical Sciences and Engineering, École Polytechnique Fédérale de Lausanne, CH-1015 Lausanne, Switzerland 3. Laboratory of Computational Chemistry and Biochemistry, Institute of Chemical Sciences and Engineering, École Polytechnique Fédérale de Lausanne, CH-1015 Lausanne, Switzerland 4. Paul Scherrer Institute, Forschungsstrasse 111, CH-5232 Villigen, Switzerland 5. Max Planck Institute for Solid State Research, Heisenbergstr. 1, 70569 Stuttgart, Germany 6. Adolphe Merkle Institute, University of Fribourg, CH-1700 Fribourg, Switzerland Email: jovana.milic@unifr.ch

**10:00** **Discussion**

**10:15** **Coffee**

**10:30** INV **Colored, Stable and Flexible Co-evaporated perovskites solar cells and minimodules** W .4
Annalisa Bruno*
Energy Research Institute @ NTU (ERI@N), Nanyang Technological University, 637553, Singapore Annalisa@ntu.edu.sg

**11:00** **Printed perovskite solar cells and modules on flexible substrates and their integration with energy storage systems** W .5
Francesca Brunetti1*, Francesca De Rossi1, Giuseppina Polino1, Babak Taheri1, Hamed Lomeri1, Matteo Bonomo2, Thomas Meredith Brown1, Aldo Di Carlo1,3, Claudia Barolo2
1. CHOSE, Department of Electronic Engineering, University of Rome Tor Vergata, via del Politecnico 1, 00133 Rome, Italy. Email: francesca.brunetti@uniroma2.it 2. Department of Chemistry, NIS Interdepartmental Centre and INSTM Reference Centre, Università degli Studi di Torino, Via G. Quarello 15 A, 10135 Turin, Italy 3. CNR-ISM Istituto di Struttura della Materia, via del Fosso del Cavaliere 100, 00133 Rome, Italy

**11:30** **Innovative Approaches to Improve Stability of Perovskite Solar Cells** W .6
I. García-Benito,1,2 J. Urieta,1 A. Molina-Ontoria,1 G. Grancini,2,3 M. K. Nazeeruddin,2 N. Martín1
1. Universidad Complutense de Madrid (Av. Complutense, s/n, 28040, Madrid, Spain) and IMDEA nanoscience (c/Faraday, 9, 28049, Madrid, Spain) 2. EPFL (Rue de l'Industrie 17, 1950 Sion, Switzerland). 3. University of Pavia (via Taramelli, 16, 27100 Pavia, Italy). Email: ingarc10@ucm.es

**11:45** **Engineering 2D TMD nanoflake films for solar energy conversion applications** W .9
Rebekah A. Wells, Marina C. Caretti, Charles R. Lhermitte, Kevin Sivula
Ecole Polytechnique Federale de Lausanne (LIMNO), EPFL (LIMNO), Los Alamos National Laboratory, EPFL (LIMNO)

**12:00** **Discussion**

**12:15** **Lunch**



**13:00** INV **Advanced modelling in electrochemical CO2 reduction** W .8
Núria López1,*
1. Institute of Chemical Research of Catalonia, The Barcelona Institute of Science and Technology (BIST), Av. Països Catalans 16, 43007 Tarragona, Spain. Email: nlopez@iciq.es

**13:30** INV **Development of new battery chemistries: Ca metal as case example** W .11
M. Rosa Palacín 1,*
1. Institut de Ciència de Materials de Barcelona, ICMAB-CSIC, Campus UAB, 08193 Bellaterra, Catalonia, Spain. Email: rosa.palacin@icmab.es

**13:45** INV **Exploring how battery materials function and fail - new characterisation approaches and new insights** W .10
Clare Gray
tba

**14:15** **Establishing structure/property interrelations of organic semiconducting solar-cell materials using fast calorimetry** W .7
Natalie Stingelin
Georgia Institute of Technology, Ferst Drive, 30332 Atlanta, GA, U.S.A. natalie.stingelin@gatech.edu

**14:30** **Discussion**

**14:45** **Coffee**

**15:00** Welcome to WiRE 2022: Zakya H. Kafafi

**15:15** INV **Design of Solid State Battery Materials and Prototypes** W .12
Jennifer L.M. Rupp
Technical University of Munich & TUM International Energy, Germany jrupp@mit.edu

**15:45** INV **Antimony based materials as non toxic alternative for photovoltaic convertion and electrochemical energy storage** W .13
Marina E. Rincón1
1 Renewable Energy Institute (IER), National University of Mexico (UNAM). Privada Xochicalco S/N, Col. Centro, Temixco, Morelos, México. Email: merg@ier.unam.mx

**16:15** **3D Nanoarchitectures as building blocks for single and hybrid energy harvesters** W .14
Xabier García-Casas, Javier Castillo-Seoane, Francisco J. Aparicio, Ali Ghaffarinejad, Lidia Contreras-Bernal, Jorge Budagoski, M. Carmen Lopez-Santos, Angel Barranco, Juan R. Sánchez-Valencia, Ana Borrás*
1. Nanotechnology on Surfaces and Plasma Lab. Materials Science Institute of Seville (CSIC-US). c/ Americo Vespucio 49, 41092, Sevilla, Spain. Email: anaisabel.borras@icmse.csic.es

**16:45** INV **Defect Chemistry and Impact on Thermoelectric Properties of the Yb2-xEuxCdSb2 Layered Zintl Phase** W .15
Ashlee K. Hauble1, Kasey P. Devlin1 and Susan M. Kauzlarich1,*
1. Chemistry Department, One Shields Ave, University of California, Davis, CA. USA. Email: smkauzlarich@ucdavis.edu

**17:15** **Discussion**

**17:30** **ROUND TABLE: The Role of Women Scientists in Renewable Energy - Zakya Kafafi - Misha Bonn - Debra Rolinson**

**: Zakya H. Kafafi / Monica Lira-Cantu**

**18:30** **Recycling of Electric Vehicle batteries: Recycling methods, Challenges and International practices of battery recycling** W 3.1
Toni Zhimomi1, Bhagyasree1 , Shweta Kalia1 , Sahana L 1
1. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)GmBH, GIZ India, 110029, New Delhi, India

**18:30** **Study of Two Novel Dyes as Efficient Photosensitizers in DSSC: DFT Investigation** W 3.2
Ankit Kargeti*(1), Shamoon Ahmad Siddiqui(2,3), Tabish Rasheed(1)
(1) School of Engineering and Technology, BML Munjal University, Gurugram, Haryana, India 122413 (2) Promising Centre for Sensors and Electronic Devices, Najran University, Najran, KSA 11001 (3) Department of Physics, Najran University, Najran, KSA 11001.

**18:30** **Boosting Perovskite based tandem solar cell performance** **W 3.3**
S. Aazou1,2*, E. Ntsoenzok3, Z. Sekkat1,2, E. M. Assaid4
1 Faculty of Sciences, University of Mohammed V in Rabat, Rabat, Morocco, 2 Optics and Photonics Center, Moroccan Foundation for Advanced Science, Innovation & Research- MAScIR- UM6P, Rabat, Morocco, 3 CEMHTI-CNRS Site Cyclotron, 3A Rue de la Férollerie, Orléans, 45071, France, 4 Faculty of Sciences, University of Chouaïb Doukkali, El Jadida, Morocco, * Correspondence: s.aazou@um5r.ac.ma

**18:30** **Carbon-Based Mesoscopic Screen-Printed Perovskite Solar Cells: Fabrication and Characterization** **W 3.4**
Kylie Thompson1, David Tanenbaum1*
1. Pomona College, Department of Physics and Astronomy, Claremont, California 91711 Email: david.tanenbaum@pomona.edu

**18:30** **New Fluorene-Based Derivatives as Hole Transporting Materials for Efficient Perovskite Solar Cells** **W 3.5**
Aistė Jegorovė1, Cristina Momblona2, Marytė Daškevičienė1, Artiom Magomedov1, Vygintas Jankauskas3, Mohammad Khaja Nazeeruddin,2 Vytautas Getautis1
1. Department of Organic Chemistry, Kaunas University of Technology, Lithuania. 2. Group for Molecular Engineering of Functional Material, Institute of Chemical Sciences and Engineering, École Polytechnique Fédérale de Lausanne, Switzerland. 3. Institute of Chemical Physics, Vilnius University, Lithuania. aisilc@ktu.lt

**18:30** **Photo-storage devices based on perovskite solar cells and supercapacitors** **W 3.6**
Cojocaru, L.*(1), Keppetipola, N. K.(1), Kumara, G. R. A . (2), Olivier, C. (1), & Toupance, T(1).
(1) University of Bordeaux, CNRS, Bordeaux INP, ISM, UMR 5255, 351 Cours de la Libération, F-33405 Talence Cédex, France (2) National Institute of Fundamental Studies, Hantana Road, 20000 Kandy, Sri Lanka

**18:30** **Pathways of Cations Migration in Minerals: Theoretical Modeling** **W 3.7**
N. A. Kabanova*a,b, T. L. Panikorovskiib, S. M. Aksenovc, E. A. Morkhovaa
aSamara Center for Theoretical Materials Science, Samara state technical university, Molodogvardeyskaya Str. 244, Samara 443100, Russia bLaboratory of nature-inspired technologies and environmental safety of the Arctic, Kola Science Centre, Russian Academy of Sciences, Fersmana str. 14, 184209 Apatity, Russia, cLaboratory of arctic mineralogy and material sciences, Kola Science Centre, Russian Academy of Sciences, Fersmana str. 14, 184209 Apatity, Russia

**18:30** **Manufacture of Stable and higher efficiency FA-based lead triiodide perovskites solar cells through doping** **W 3.8**
Amal Bouich, Júlia Marí Guaita, Inmaculada Guaita Pradas, Bernabé Mari, Pablo Palacios.
Institut de Disseny i Fabricació, Universitat Politècnica.,València, Spain Dept. Física Aplicada, Universitat Politècnica Madrid, Spain

**18:30** **Bismuth-based hybrid perovskites for thermoelectrics** **W 3.9**
Vanira Trifiletti, Simona Binetti, Simone Fabiano, Oliver Fenwick
Vanira Trifiletti, Simona Binetti Department of Materials Science and Solar Energy Research Center (MIB-SOLAR), University of Milano-Bicocca, Via Cozzi 55, 20125 Milano, IT Vanira Trifilett, Oliver Fenwick School of Engineering and Materials Science, Queen Mary University of London, 327 Mile End Road, London E1 4NS, UK Simone Fabiano Laboratory of Organic Electronics, Department of Science and Technology, Linköping University, Norrköping, SE.

**18:30** **An innovative Wireless Energy Transfer System based on thermoelectric devices powered by an incident high-power laser beam** **W 3.10**
M. M. Maia, A. L. Pires, M. Rocha, A. M. Pereira
IFIMUP - Institute of Physics for Advanced Materials, Nanotechnology and Photonics, Faculdade de Ciências da Universidade do Porto, 4169-007 Porto, Portugal

**18:30** **Liquid Crystal Based New Generation Organic Photovoltaics** **W 3.11**
Nimet Yilmaz Canli1*
1. Yildiz Technical University, Department of Physics, 34210 Istanbul, Turkey. Email: niyilmaz@yahoo.com, niyilmaz@yildiz.edu.tr

**18:30** **Stepping towards net zero goals with green powered charging stations** **W 3.12**
Jayasree K S, Sahana L, Toni Zhimomi, Bhagyasree, Shweta Kalia
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)GmBH Email: ksjayasree97@gmail.com, sahana.l@giz.de, toni.zhimomi@giz.de, bhagyasree.bhagyasree@giz.de, shweta.kalia@giz.de



**18:30** **Impact of chopping fequency and voltage/light bias during EQE measurements of perovskite/Silicon tandem solar cells** **W 3.13**
Vasiliki Paraskeva1, Maria Hadjipanayi1, Matthew Norton1, George E. Georghiou1
1. FOSS Research Centre for Sustainable Energy, Department of Electrical and Computer Engineering, University of Cyprus, 75 Kallipoleos St., Nicosia, 1678, Cyprus Email: vparas01@ucy.ac.cy

**18:30** **Metallophthalocyanines as Efficient Hole Transporting Materials in Perovskite Solar Cells** **W 3.14**
Ángela Sastre-Santos,1, * Adrián Herrero, Desiré Molina,1 Jorge Follana-Berná, Lydia Ferrer, 1 Javier Ortiz1
1. Área de Química Orgánica, Instituto de Bioingeniería, Universidad Miguel Hernández, Elche 03202 (Alicante), Spain. E-mail: asastre@umh.es

**18:30** **A bichromophoric organic-inorganic semiconductor nanocomposite: device ready broad spectral response light-harvesting material** **W 3.15**
Kajari Dutta, 1, * Swarna Goswami,1 Arnab Dey, 1 Sagareeka Ghosh, 1 Susmita Das, 2 Avisek Dutta4, Shibsankar Dutta3, Sukanta Dec3
1. Department of Physics, Amity University, Major Arterial Road (South-East), Action Area II, Newtown, Kolkata, 700135, India. 2. Department of Chemistry, Amity University, Major Arterial Road (South-East), Action Area II, Newtown, Kolkata, Kolkata, 700135, India 3. Department of Physics, Presidency University, 86/1, College Street, Kolkata, 700073, India 4. School of Materials Sciences, Indian Association for the Cultivation of Science, Kolkata, 700032 Email: das.kajari@gmail.com, kdutta@kol.amity.edu

**18:30** **Metrology on Commercial Thin Film Photovoltaic Modules – Working the Black Box** **W 3.16**
Bettina Friedel1,*
1. Physikalisch-Technische Bundesanstalt (PTB), Department for Applied Radiometry – Solar Modules. Bundesallee 100, 38116 Braunschweig, Germany. Email: bettina.friedel@ptb.de

**18:30** **The role of the organic/inorganic cation and the halide anion on the structural, optical properties and stability of perovskite** **W 3.17**
Hajar Moumine1,2, Hasnae Chfii1, Bernabé Marí Soucase2, Mohammed Abd-Lefdil1, Lahoucine Atourki1
1. Mohammed V University of Rabat, Department of physics, Rabat, Morocco. Email : hajar.moumine@um5r.ac.ma 2. Polytechnic University of Valencia, Institute of Design & Fabrication (IDF), Valencia, Spain Email : hmoumin@doctor.upv.es

**18:30** **Pathway Toward Fabrication of Efficient and Stable Perovskite Solar Modules** **W 3.18**
Narges Yaghoobi Nia1,2*, Mahmoud Zendehdel1, Aldo Di Carlo1,2
1. CHOSE, Department of Electronic Engineering, University of Rome Tor Vergata, via del Politecnico 1, 00133 Rome, Italy 2. CNR-ISM Istituto di Struttura della Materia, via del Fosso del Cavaliere 100, 00133 Rome, Italy Email: YAGHOOBI.NIA@ing.uniroma2.it

**18:30** **Detailed electron nanoscopy investigations on Zn3P2 nanowires with photovoltaics application** **W 3.19**
Spadaro Maria Chiara1*, Escobar-Steinval Simon2,3, Dzade Nelson Y.4, Martì-Sànchez Sara1, Torres-Vila Pol1, Fontcuberta i Morral Anna2 and Arbiol Jordi1,5
1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Campus UAB, Bellaterra, 08193 Barcelona, Catalonia, Spain. 2. Laboratory of Semiconductor Materials, Institute of Materials, Ecole Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland 3. Center for Analysis and Synthesis and NanoLund, Lund University, Box 124, 221 00 Lund, Sweden 4. School of Chemistry, Cardiff University, CF10 3AT Cardiff, United Kingdom 5. ICREA, Pg Lluis Companys 23, 08010 Barcelona, Catalonia, Spain. * Email: mariachiara.spadaro@icn2.cat

**18:30** **Efficient Perovskite Solar Cells using Enamine-derived Hole Transporting Materials** **W 3.20**
Deimante Vaitukaityte1, Minh Anh Truong2, Yasuko Iwasaki2, Richard Murdey2, Kasparas Rakstys1*, Atsushi Wakamiya2*, Vytautas Getautis1*
1. Department of Organic Chemistry, Kaunas University of Technology, Lithuania. Email: deimante.vaitukaityte@ktu.lt 2. Institute for Chemical Research, Kyoto University, Japan

**18:30** **Novel Organic Materials for the Redox Flow Batteries: Implementation of Triarylamine and Phenazine Core Structures** **W 3.21**
Elena I. Romadina 1,*, Keith J. Stevenson 1
1. Skolkovo Institute of Science and Technology, Bolshoy Boulevard 30, 1, Moscow, Russia Email: Elena.Romadina@skoltech.ru

**18:30** **Transient absorption studies on organic semiconductors photocatalyst** **W 3.22**

Soranyel Gonzalez Carrero,1 Jan Kosco,2 Teng Fei,1 Yifan Dong,1 Weidong Xu,1 Ian McCulloch,2,3 James Durrant1
1. Department of Chemistry, Centre for Processable Electronics, Imperial College London, London W12 0BZ, U.K. 2. King Abdullah University of Science and Technology (KAUST), KAUST Solar Center (KSC), Physical Sciences and Engineering Division (PSE), Thuwal 23955-6900, Kingdom of Saudi Arabia. 3. Department of Chemistry, University of Oxford, 12 Mansfield Road, Oxford, OX1 4BH, UK Email: s.gonzalez-carrero@imperial.ac.uk

**18:30** **New low-cost and dopant-free hole transporting materials for high performance and stable perovskite solar cells** **W 3.23**

Šarūnė Daškevičiūtė-Gegužienė1, Cristina Momblona2, Kasparas Rakštys1, Marytė Daškevičienė1, Vytautas Getautis1, Mohammad Khaja Nazeeruddin2
1. Department of Organic Chemistry, Kaunas University of Technology, Kaunas, Lithuania. 2. Group for Molecular Engineering of Functional Materials, Institute of Chemical Sciences and Engineering, École Polytechnique Fédérale de Lausanne, Switzerland Email: sarune.daskeviciute@ktu.lt

**18:30** **Exergy and carbon taxing analysis of renewable energy system: application of solar photovoltaic thermal collector** **W 3.24**

Rasikh Tariq1, *, Ixchel Gijón-Arreortúa2
1. Facultad de Ingeniería, Universidad Autónoma de Yucatán, Av. Industrias No Contaminantes por Anillo Periférico Norte, Apdo. Postal 150, Cordemex, Mérida, 97203, Yucatán, Mexico. Email: rasikhtariq@gmail.com, rasikhtariq@alumnos.uady.mx. Website: sites.google.com/view/rasikhtariq. 2. Facultad de Ingeniería Química, Universidad Autónoma de Yucatán, Mérida, México.

**18:30** **Modified P3HT materials as hole transport layers for flexible perovskite solar cells and space applications** **W 3.25**

Francesca De Rossi1,*, Matteo Bonomo2, Babak Taheri1, Giacomo Renno2, Viktoria Ilieva2, Vishal Gupta3, Narges Yaghoobi Nia1,7, Andrea Fin3, P. Quagliotto2, Paolo Rech5, C. Frost6, C. Cazzaniga6, Marco Ottavi3, Aldo Di Carlo1,7, Claudia Barolo2,8, Francesca Brunetti1
1 CHOSE, Department of Electronic Engineering, University of Rome Tor Vergata, via del Politecnico 1, 00133 Rome, Italy – Email: francesca.de.rossi@uniroma2.it 2 Department of Chemistry, NIS Interdepartmental Centre and INSTM Reference Centre, Università degli Studi di Torino, Via G. Quarello 15A, 10135 – Turin, Italy 3 Department of Electronic Engineering, University of Rome Tor Vergata, via del Politecnico 1, 00133 Rome, Italy 4 Department of Science and Drug Technology, Università degli Studi di Torino, Via Pietro Giuria 9, 10125 Turin, Italy 5 Universidade Federal do Rio Grande do Sul (UFRGS), Brazil 6 ISIS facility, UKRI-STFC, , Rutherford Appleton Laboratory, Didcot, OX11 0QX, United Kingdom 7 CNR-ISM Istituto di Struttura della Materia, via del Fosso del Cavaliere 100, 00133 Rome, Italy 8 ICxT Interdepartmental Centre, Università degli Studi di Torino, Via Lungo Dora Siena 100, 10153 Turin, Italy

**18:30** **Energy contribution of a skylight for heating an Andean rural house located at 3700 masl** **W 3.26**

Jessica Molina1, Mónica Gómez1*, Gilles Lefebvre2
1 Universidad Nacional de Ingeniería (UNI). Facultad de Ciencias. Tupac Amaru Av. 210, Rimac, Lima, Peru. 2 Université Paris-Est. Centre d'Étude et de Recherche en Thermique, Environnement et Systèmes (CERTES), Général de Gaulle Av. 94010, Créteil Cedex, France. *Email: mgomez@uni.edu.pe

**18:30** **Back contact electrodes for perovskite solar cells** **W 3.27**

Xiongfeng Lin,1,2 Sonia R. Raga, 1,2,3 Boer Tan,1,2 Siqi Deng,1,2 Kevin J. Rietwyk,1,2 Anton Weissbach,1,2,4 Anthony S.R. Chesman,5,6 David P. McMeekin,1,2 Qingdong Ou,7 Boya Zhao,1,2 Jianfeng Lu,1,2,8 Nicolas H. Voelcker,5,6,9,10 Liangcong Jiang,1,2 Andrew D. Scully,5 Liangcong Jiang,1,2 Qiaoliang Bao,7 Yi-Bing Cheng,11 , Udo Bach1,2,5,6*
1 Department of Chemical and Biological Engineering, Monash University, Victoria 3800, Australia 2 ARC Center of Excellence in Exciton Science, Monash University, Victoria 3800, Australia 3 Catalan Institute of Nanoscience and Nanotechnology (ICN2), Bellaterra, Barcelona 08193, Spain 4 Institut für Angewandte Photophysik, Technische Universität Dresden, Dresden 01062, Germany 5 CSIRO Manufacturing, Clayton, Victoria 3168, Australia 6 The Melbourne Centre for Nanofabrication, Victorian Node of the Australian National Fabrication Facility, Clayton, Victoria 3168, Australia 7 Department of Materials Science and Engineering, Monash University, Victoria 3800, Australia 8 State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology, Wuhan 430070, China 9 Drug Delivery, Disposition and Dynamics, Monash Institute of Pharmaceutical Sciences, Monash University, 381 Royal Parade, Parkville, Victoria 3052, Australia 10 INM-Leibniz Institute for New Materials, Campus D2 2, Saarbrücken 66123, Germany 11 State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, Wuhan 430070, China Contact: sonia.ruizraga@icn2.cat, udo.bach@monash.edu



**18:30** **In-situ characterzation techniques for dismantling stability mechanisms in Perovskite Solar Cells with accelerated testing** **W 3.28**

Fanny Baumann1, Sonia Ruiz Raga 1, Monica Lira-Cantu1,*
1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and the Barcelona Institute of Science and Technology (BIST). Building ICN2, Campus UAB E-08193, Bellaterra, Barcelona, Spain. Email: monica.lira@icn2.cat

**18:30** **Surface Functionalized MXene-based Halide Perovskite Solar Cells** **W 3.29**

Ashitha Paingott Parambil1, Masoud Karimipour1, Monica Lira-Cantu1,*
1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and the Barcelona Institute of Science and Technology (BIST). Building ICN2, Campus UAB E-08193, Bellaterra, Barcelona, Spain. Email: monica.lira@icn2.cat

**18:30** **Enhancement of stability and mechanical bending durability of flexible perovskite solar cells using perovskite layer sandwiching** **W 3.30**

Masoud Karimipour1, Monica Lira-Cantu1,*
1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and the Barcelona Institute of Science and Technology (BIST). Building ICN2, Campus UAB E-08193, Bellaterra, Barcelona, Spain. Email: monica.lira@icn2.cat

**18:30** **Towards the Commercialization of Perovskite Solar Cells: Encapsulation Strategies and Outdoor Stability Testing** **W 3.31**

Kenedy Tabah Tanko1, Carlos Pereyra1 Fanny A. K. Baumann1, Sonia Ruiz Raga1, Masoud Karimipour1, Monica Lira-Cantu1,*
1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and the Barcelona Institute of Science and Technology (BIST). Building ICN2, Campus UAB E-08193, Bellaterra, Barcelona, Spain. Email: monica.lira@icn2.cat

**18:30** **Ferroelectric oxide/Halide Perovskite Solar Cells** **W 3.32**

Carlos Pereyra1, Saptam Ganguly1, Haibing Xie1, Jesus Ricote2, Ricardo Jimenez Rioboo2 , Maria Lourdes Calzada2, Monica Lira-Cantu1*
1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and the Barcelona Institute of Science and Technology (BIST). Building ICN2, Campus UAB E-08193, Bellaterra, Barcelona, Spain. Email: monica.lira@icn2.cat 2. Instituto de Ciencia de Materiales de Madrid, ICMM-CSIC. C / Sor Juana Inés de la Cruz 3, 28049, Canto Blanco, Madrid, Spain.

**18:30** **Electric Vehicle Battery Modelling: Comparison of Battery Performance in relation to different electric vehicle segements** **W 3.33**

Bhagyasree1, Shweta Kalia1, Sahana L1,Toni Zhimomi1-*
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)GmBH,B 5/2, Safdarjung Enclave, New Delhi, India-110029 Email: bhagyasree.bhagyasree@giz.de, shweta.kalia@giz.de , sahana.l@giz.de , toni.zhimomi@giz.de

**18:30** **Second life of Batteries: Remaining Life Prediction and Applications** **W 3.34**

Bhagyasree1, Toni Zhimomi1 , Shweta Kalia1, Sahana L1 -*
1. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)GmBH,B 5/2, Safdarjung Enclave, New Delhi, India-110029 Email: bhagyasree.bhagyasree@giz.de, toni.zhimomi@giz.de , shweta.kalia@giz.de , sahana.l@giz.de

**18:30** **Low dimensional halide perovskites for efficient memristors** **W 3.35**

Shrreya Krishnamurthy
Department of Physics, Savitribai Phule Pune University, Ganeshkhind Rd., Pune, India – 411 007

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