

# FINAL ANNOUNCEMENT AND CALL FOR PAPERS

Abstract deadline: 21<sup>st</sup> May, 2018

Conference and exhibition will be held  
at the Main Campus  
of the Warsaw University of Technology  
Plac Politechniki 1 - Warsaw, Poland

17<sup>th</sup> - 20<sup>th</sup> September 2018



€ · MRS

2018 Fall Meeting

The conference will include:  
21 parallel symposia, one plenary session, one exhibition and much more

[www.european-mrs.com](http://www.european-mrs.com)



## **E-MRS 2018 FALL MEETING**

---

17<sup>th</sup>-20<sup>th</sup> September  
Warsaw University of Technology - POLAND

## Introduction

The European Materials Research Society (E-MRS) was established in 1983 through the initiative of individual European Materials scientists. A number of European materials scientists who attended the MRS meetings in the U.S.A. realised that such a society could be of benefit to Europe to enhance the links between materials science and industry and to provide a voice for the materials community. Most of the problems facing the world such as energy supply and health will be solved only by breakthroughs in materials science. It is vital that the outcomes of research are utilised through technological experience and innovation for the benefit of mankind. The Fall Meeting provides the opportunity to exchange ideas, expand one's knowledge and make new contacts. The conference will consist of 22 parallel symposia and a plenary session and provides an international forum to discuss recent advances in the field of materials science. The conference will be augmented by an exhibition of products and services of interest to the conference participants. The Conference will be held at the Central Campus of the Warsaw University of Technology, from 17th to 20th September 2018. It is the 17th E-MRS Fall Meeting following its launch in 2002 to run in parallel to the Spring Meeting in France.

Don't miss it! We look forward to welcoming you to Warsaw and your active contribution and participation in the conference.

## The European Coordination Group



**George KIRIAKIDIS**  
President

IESL/FORTH  
100, N. Plastira str. Voutes  
Heraklion 70013 Crete, Greece  
[kiriakid@iesl.forth.gr](mailto:kiriakid@iesl.forth.gr)



**Peter WELLMANN**  
Vice President

Materials Department 6  
Electronic Materials and Energy Technology  
University of Erlangen  
Martensstr. 7, 91058 Erlangen, Germany  
[peter.wellmann@ww.uni-erlangen.de](mailto:peter.wellmann@ww.uni-erlangen.de)



**Paul SIFFERT**  
General Secretary

E-MRS Headquarters  
BP. 20, F-67037 Strasbourg cedex 2, France  
[paul.siffert@european-mrs.com](mailto:paul.siffert@european-mrs.com)

## The Conference Chairpersons:



**Valentin CRACIUN**

National Institute for Laser, Plasma,  
and Radiation  
Physics Laser Department  
Bucharest  
Romania  
[valentin.craciun@infipr.ro](mailto:valentin.craciun@infipr.ro)



**Malgorzata LEWANDOWSKA**

Faculty of Materials Science &  
Engineering  
Warsaw University of Technology  
141 Woloska Street, 02-507 Warsaw,  
Poland  
[Malgorzata.lewandowska@pw.edu.pl](mailto:Malgorzata.lewandowska@pw.edu.pl)



**Joerg K.N. LINDNER**

Universität Paderborn  
Fakultät für Naturwissenschaften  
Department Physik - A4.226  
Warburger Straße 100  
33098 Paderborn, Germany  
[lindner@physik.upb.de](mailto:lindner@physik.upb.de)



**Evelyne MARTIN**

Institute of Electronics,  
Microelectronics and  
Nanotechnology (IEMN)  
Villeneuve d'Ascq  
France  
[evelyne.lampin@univ-lille1.fr](mailto:evelyne.lampin@univ-lille1.fr)

## The Conference Organizers:



European Materials Research  
Society



Warsaw University  
of Technology



Polish Materials Science  
Society



Institute of Physics  
PAN



Plenary Session (Wednesday morning, 19<sup>th</sup> September)

1. Presentation of the Jan Czocharlski Award to Professor Herbert Gleiter, The Research Centre Karlsruhe (INT), Germany  
Lecture by Professor Herbert Gleiter  
*"Nano-glasses: The Way to a World of New Materials with New Structures and Technological Applications"*
2. Lecture by Professor Veena Sahajwalla, Centre for Sustainable Materials Research & Technology (SMaRT@UNSW), Australia
3. Lecture by Professor Themis Prodromakis, Electronic Materials & Devices Research Group, Zepler Institute, UK  
*"Harnessing the power of the brain with metal-oxide nano-electronics"*

## Poster Sessions:

1. Monday, 17<sup>th</sup> September - 17:30 – 19:30
2. Tuesday, 18<sup>th</sup> September - 17:30 – 19:30

Scheduled Symposia (17<sup>th</sup> – 20<sup>th</sup> September):**MATERIALS FOR ENERGY**

- Symposium A : Materials for energy application  
 Symposium B : Battery and energy storage devices  
 Symposium C : Perovskite solar cells: surface, interface and materials aspects

**LAYERED, HYBRID AND BIOMATERIALS**

- Symposium D : Multifunctional advanced composite materials: from idea to market  
 Symposium E : Bioinspired and biointegrated materials as new frontiers nanomaterials VIII  
 Symposium F : Surfaces and interfaces in multilayered thin films and nano-composites  
 Symposium G : Recent progress in superconductivity of two-dimensional layered systems  
 Symposium H : Emerging layered functional materials and their characterization

**MODELLING**

- Symposium I : Atomic-scale design protocols towards energy, electronic, catalysis and sensing applications  
 Symposium J : Theory and simulation in physics for materials applications

**NANOMATERIALS**

- Symposium K : Nanomaterials- electronics & -photonics  
 Symposium L : Advances in nanoparticles: synthesis, characterization, theoretical modelling, and applications  
 Symposium M : Organized nanostructures and nano-objects: fabrication, characterization and applications  
 Symposium N : New atomic layer deposition approaches towards functional materials and devices

**SEMICONDUCTORS AND ELECTRONIC MATERIALS**

- Symposium O : Diamond for electronic devices III  
 Symposium P : Epitaxial oxide films for electronic applications  
 Symposium Q : Phase transitions and properties of ferroics in the form of single crystals, ceramics and thin films  
 Symposium R : New frontiers in wide-bandgap semiconductors and heterostructures for electronics, optoelectronics and sensing  
 Symposium S : Spin-dependent phenomena in semiconductors, 2D materials and topological insulators  
 Symposium U : Monolithic and heterogeneous integration of advanced materials & devices on silicon  
 Symposium V : High pressure synthesis & characterization of functional materials

**Introduction and scope:**

A symposium dedicated to the wide range of materials with a focused application in the field of renewable and sustainable energy, is much needed which can connect the theory and experimental outcome spontaneously. Our symposium will be one such attempt in the field of energy research.

Due to simple covalent bonding, carbon shows vivid properties, which can be manifested into the energy applications through different dimensionality like carbon quantum dots, fullerene, carbon nanotubes, two-dimensional graphene and Diamond. They all have enormous applications in the field of solar cells, catalysis, battery technology and hydrogen storage. The ongoing feedback between the experiment and theory concerning energy harvesting opens up new direction of scientific thrust not only in the carbon based systems, but also materials that are attaining interesting electronic, structural, optical and transport properties in order to be applied for sustainable energy resolution. Materials modelling have become equally important along with the experimental investigation to predict such properties, which can be tuned in for different energy applications in the area mentioned above. This is because the atomistic insight of a material is one of the intuitive reasons behind its different properties and this insight we can derive from electronic structure of different materials. Our symposium will not only be limited to carbon materials, but also all other novel materials that have attracted the focus of the scientific community in the vast field of energy materials. The applications of such materials will be having a broad view in the area of solar cell, photocatalytic water splitting, battery, hydrogen storage and fuel cells. Scientists doing their research in all the above area will be getting a common platform to showcase their latest findings, which all will be attached through a common string named Energy. The symposium will be a mixture of theory and experiments with a strong view of bridging the gap between them. The choice of materials is having a wide range from oxide materials to recently synthesized transition metal di-chalcogenides and dimension-wise they can be in bulk, surface, monolayer phase or in form of hetero-structures and nano-composites.

**Hot topics to be covered by the symposium:**

- Carbon materials of different dimensionalities – present and next generation
- Application of Diamond in Energy Research
- Oxide materials and their application in energy research
- Two-dimensional materials for energy production and storage
- Perovskite based materials for solar cell
- Photocatalytic materials for hydrogen production
- Novel materials for enhance battery performance
- Heterostructured nano-materials and nanocomposites
- Materials For Li<sup>+</sup> and Na<sup>+</sup> ion as well for Organic Battery
- Novel Materials for supercapacitor

## Symposium Organizers:

**Rajeev AHUJA**

Uppsala University  
Department of Physics and Astronomy,  
Box-516, SE-75120 Uppsala, Sweden.  
[rajeev.ahuja@physics.uu.se](mailto:rajeev.ahuja@physics.uu.se)

**Yong-Mook KANG**

Dongguk University  
Dept. of Energy & Materials Engineering,  
30, Pildong-ro 1 gil, Jung-gu,  
Seoul, 04620, Republic of Korea  
[dake1234@dongguk.edu](mailto:dake1234@dongguk.edu)

**Priya VASHISHTA**

Dept. of Physics & Astronomy,  
University of Southern California  
Los Angeles, CA 90089 – 0242 USA  
[priyav@usc.edu](mailto:priyav@usc.edu)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

For sustainable economic growth and environment protection, energy generated from renewable sources has to be converted and stored by highly efficient and ecofriendly ways. Rechargeable batteries and supercapacitors are in the center of interest all over the world for the development of electrochemical energy storage system from the macroscale to the microscale.

Electrochemical energy storage is a rapidly advancing field building on a continuous stream of innovative ideas. As renewable energy sources become increasingly prevalent the need for high energy-density, high- power storage devices with long cycle lives is greater than ever. The development of suitable materials for these devices begins with a complete understanding of the complex processes that govern energy storage and conversion spanning many orders of magnitude in length and time scales. The focus of this meeting is to bring together all aspects of batteries and electrochemical storage devices across multiple scales, from modelling and nanoscale characterization to full-scale battery construction and testing regimes. An interdisciplinary selection of speakers will cover this broad range of topics to develop an overview of the current research and challenges in the battery field. The intention is to bring together the international community working on the subjects and to enable effective interactions between research and engineering communities. Although a Europe-bound event, participation is invited from all continents. It provides an excellent opportunity for scientists, engineers and manufactures to present recent technical progress and products, to establish new contacts in the appreciated networking events and to exchange scientific and technical information. The symposium is structured in nine different sections covering diagnostic techniques and systems design/components.

**Topics to be covered by the symposium:**

- Lithium ion cells
- Non lithium technologies
- Flow-batteries
- Supercapacitors
- Battery systems
- Automotive and mobile applications
- Stationary battery system
- Integrated systems
- LCA electrochemical storage

**Symposium Organizers:****Claudia D'URSO**

CNR-ITAE  
Via Salita Santa Lucia Sopra Contesse, 5 – 98126  
Messina, Italy  
[URSO@itaecnr.it](mailto:URSO@itaecnr.it)

**Juergen GARCHE**

Ulm University, Chemistry Department  
Albert-Einstein-Allee 11, 89081 Ulm, Germany  
[juergen.garche@uni-ulm.de](mailto:juergen.garche@uni-ulm.de)

**Luis Gerardo ARRIAGA HURTADO**

CIDETEQ-S.C.  
Sanfandila Pedro Escobedo, Qro C.P. 76703,  
Mexico  
[lariaga@cideteq.mx](mailto:lariaga@cideteq.mx)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

The Symposium C is devoted to the presentation of original contributions on fundamental research at the surface and interface, and materials science engineering of the perovskite solar cells. Both theoretical and experimental studies which focus on the preparation and understanding of materials for perovskite solar cells are relevant.

The performance of perovskite solar cells, critically depends on the interfaces between the individual layers. For instance, efficient generation of charges, extraction, and transport with minimum recombination through interlayer interfaces is crucial to attain high-efficiency solar cell devices. During the overlayer formation many unexpected reactions may occur that in effect may change the expected energy bands positions and thus the charge transport properties across the layers. The interfacial reactions often lead to the degradation of the perovskite solar cells and hence to the performance and stability of these devices. Besides that, the perovskite film itself can be grown as an intrinsic, n-type or/and p-type material depending on the used substrate. Most of the preparation methods like spin-coating, co-evaporation, vapor-assisted deposition, etc. developed to prepare perovskite generate films with polycrystalline grains. The adjacent grains may assume different crystal orientations and/or have different chemical compositions, which impacts charge excitation and dynamics and thereby the overall solar cell performance. The unbalanced charge accumulation or depletion between grain boundaries and grain interiors can cause band bending, which affects the separation of photoexcited electron-hole pairs and charge carrier transport across the grain interfaces formed between grains. Therefore, it is crucial to investigate the correlation between local electronic properties and local morphologies.

The aim of this Symposium is to gather together all researchers involved in the investigation of the (new) perovskite materials for photovoltaic applications and to provide a discussion forum for them. Papers related to all aspects of the fundamental properties of the perovskite materials and devices, i.e. new materials for stable and efficient perovskite solar cells, laboratory- and synchrotron-based characterization of the surface and interfaces in the perovskite solar cell stacks, perovskite-inspired materials, application of hybrid perovskites in LED and photoelectrochemical water splitting devices, non-PV applications of hybrid perovskite films, new deposition techniques for industrialization of perovskite solar cells, to name a few, are invited.

**Hot topics to be covered by the symposium:**

- Ex-situ, in-situ and in-operando studies of the perovskite materials and devices
- New materials and interfaces for stable and efficient photovoltaics
- Low-temperature processes for perovskite devices fabrication
- Perovskites in tandem with other materials
- Perovskites for non-photovoltaics (LED, water splitting) applications
- Perovskite-inspired materials
- Atomic layer deposition (ALD) for perovskite-based devices
- Engineering transparent conducting oxides (TCOs) for perovskite-based devices
- Development of flexible perovskite-based photovoltaics
- Modeling of perovskite materials and solar cells
- 2D and 3D perovskites

**List of invited speakers:**

- Steve Albrecht, *Tandem solar cells*, Helmholtz-Zentrum Berlin (Germany)
- Juan-Pablo Correa Baena, *Promises and challenges in perovskite solar cells*, Massachusetts Institute of Technology (USA)
- Mariadriana Creatore, *ALD for perovskite solar cells*, Eindhoven University of Technology (The Netherlands)
- Dipankar Das Sarma, *Electronic properties of hybrid perovskites*, Indian Institute of Science (India)
- Caterina Ducati, *Characterising degradation of perovskite solar cells through in-situ and operando Electron Microscopy*, University of Cambridge (UK)
- Germa Garcia-Belmonte, *Device and interfacial properties of the perovskite solar cell*, Institute of Advanced Materials (Spain)
- Selina Olthof, *Substrate-dependent electronic structure and film formation of MAPbI<sub>3</sub> perovskites*, University of Cologne (Germany)
- Nam-Gyu Park, *Methodologies toward highly efficient perovskite solar cells*, Sungkyunkwan University (South Korea)
- Daniel Prochowicz, *Mechanochemical Approach to Inorganic-Organic Hybrid Materials for Perovskite Solar Cells*, Polish Academy of Sciences in Warsaw (Poland)
- Zhiping Wang, *Efficient ambient-air-stable solar cells with 2D–3D heterostructured butylammonium-caesium-formamidinium lead halide perovskites*, University of Oxford (UK)
- Konrad Wojciechowski, *Printable perovskite solar cells*, Saule Technologies (Poland)

**List of scientific committee members:**

- Antonio Abate (Germany)
- Thomas Bein (Germany)
- Konrad Domanski (Switzerland)
- David Cahen (Israel)
- Karsten Henkel (Germany)
- Lukas Kegelmann (Germany)
- Olga Malinkiewicz (Poland)
- Barry Rand (USA)
- Henry Snaith (UK)

**Symposium Organizers:****Małgorzata KOT**

BTU Cottbus-Senftenberg  
Konrad-Wachsmann-Allee 17, 03046  
Cottbus, Germany  
[sowinska.gosia@gmail.com](mailto:sowinska.gosia@gmail.com)

**Michael SALIBA**

Adolphe Merkle Institute  
University of Fribourg  
Chemin des Verdiers 4  
CH-1700 Fribourg  
[miliba@gmail.com](mailto:miliba@gmail.com)

**Chittaranjan DAS**

Technical University  
Darmstadt  
Otto-Berndt-Str. 3, 64287  
Darmstadt, Germany  
[chittait@yahoo.com](mailto:chittait@yahoo.com)

**Derya BARAN BRYANT**

KAUST  
KSC Solar Center, 23955 Thuwal, Kingdom  
of Saudi Arabia  
[derya.baran@kaust.edu.sa](mailto:derya.baran@kaust.edu.sa)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

Composite materials are rapidly becoming materials of choice within many industrial applications, in particular aviation, transport, space, construction and building field, ecology, sport, biomedicine, electronics, energy sector, including renewable energetic, and etc. Nowadays, the biggest challenges coming from the technological transfers for composites growth, the increasing consumption of this materials and numerous innovations to feed the market. Variation of the nature of components, using of nanocomponents and nanoadditives to the materials of matrix and to the reinforcement component, development of new production technologies and new kinds of reinforcements including textiles, fibers, meshes and etc. allow to create multifunctional materials with given unique complex of service characteristics for different applications, including extreme performances. New and unique possibilities are opening due to development of new classes of polymer based binders for so called advanced ultra light weight materials and composites. Furthermore development of the additive technologies, 3-D printing technologies of composite production also ensure the new areas of applications for the composites with unique complex of service parameters. All these materials will be in the main focus of symposium D activity in 2018 year.

For advanced composites materials based on metal, ceramic, polymer matrix and reinforced by various particles, fibers, textiles, meshes or modified by nanocomponents of different nature which are traditionally used in aeronautic, energy sector, automobile, space and transport industry, ecology, machine building, construction sector, biomedicine and electronics the task of creating materials with given complex of service parameters ensuring their safety and reliability became more and more actual. Production of composite materials with given complex of service parameters together with decreasing of their sizes and costs of their production allow essentially widen their functionalities and find the new ways of their application. Therefore the task of creation of composite materials and complex structures on the basis of them using modern methods and materials for their joining will be the key topic of proposed symposium. Modern methods of modeling for advanced ceramics, composites and complex structures production, micro- and macrostructure and forecasting of the physical and chemical properties allow successfully decide such kind of tasks. The results of several international projects concerning new methods of production, testing and applications of composite materials reinforced by carbon fibers and carbon structures and metal and ceramic composites for thermal protection system for space applications will be presented at proposed symposium. Special time will be devoted to innovative research, to the questions of technology transfer and international cooperation in the field of advanced ceramic and composite materials.

**Hot topics to be covered by the symposium:**

- Fundamental study, modelling of technology processes, structure and properties, including phase equilibrium diagrams for multicomponent systems
- Production technologies for advanced composites powders and their properties, including various kinds of nanoadditives and their influence upon service properties of final product
- Production technologies for composites coatings and their properties, including multilayer coatings and their new regulated functionalities
- Production technologies for bulk composites and their properties, including novel sintering technologies for complex compounds and structures, 3-D printing technologies
- Complex ceramic and composite structures for extreme performances with special attention for materials for aviation and space applications
- Nanoceramic and nanocomposites: peculiarities of their structure and properties
- Novel techniques for advanced ceramic and composite materials characterization
- New smart lightweight nano-enabled materials with enhanced functionalities
- Novel areas of application of advanced ceramic and composites, including space, transport, biomaterials, micro- and nanoelectronic, constructional ones
- Results and perspectives of international cooperation in the field of creation of advanced ceramic and composite materials
- Recycling technologies, life cycle assessments for raw materials and final composites
- Production of secondary composites for various applications including tribological ones
- Advanced materials for additive manufacturing

**Symposium Organizers:****Iryna BILAN**

Frantsevich Institute for Problems of Materials Sciences  
3 Krzhyzhanovsky Str, 03142, Kyiv, Ukraine  
[belanira2014@gmail.com](mailto:belanira2014@gmail.com), [belanira@bk.ru](mailto:belanira@bk.ru)

**Mikolaj SZAFRAN**

Faculty of Chemistry, Warsaw University of Technology  
ul. Noakowskiego 3, 00-664 Warsaw, Poland  
[szafran@ch.pw.edu.pl](mailto:szafran@ch.pw.edu.pl)

**Dmitry G. ESKIN**

Brunel University  
Brunel Centre for Advanced Solidification Technology,  
Kingston Ln, London, Uxbridge UB8 3PH, U.K.  
[Dmitry.Eskin@brunel.ac.uk](mailto:Dmitry.Eskin@brunel.ac.uk)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)



**Introduction and scope:**

The Symposia "Bioinspired & Biointegrated Materials as New Frontiers Nanomaterials" series I - VII has been running from 2009 to 2017, with total of Presenters 1557 from 39 Countries. Following the success of the symposia I - VII due to the reports and discussions on rapidly development bioinspired, biomimetic technologies for next generation biomedical nano - materials, - systems, - robotic devices, the Symposium VIII is aimed to give overview of recent development for fundamentals of nanotechnologies for biomedical engineering multifunctional materials in biomedical healthcare field, environmental control and security. The newest nanotechnologies and bio - materials, - systems, - robotic devices fields, which determine developing biomimetic cells and skin, bone tissue engineering, remodeling ones and adaptation to a regeneration of neural systems using, created implantable bionic systems.

The symposium will cover the frontiers on the engineering, researching, molecular scale characterization multifunctional biomolecular biosensor systems in medical and environmental researches and bio - photonics, - electronics, - magnetic molecular systems, bioimmobilized NPs as nanorobots in vivo applications using bio - inspired, mimetic, templated by biomolecules (virus, marine plants proteins, pigments) inorganic nanoparticles for the quantum dots nanosystems, bioinspired composite materials. The design, engineering of these materials are aimed to obtain the properties which respond to external, biologically compatible stimuli (physical, chemical, biological) and to electronic, photonic, magnetic nanosystems. In addition, the next step is transferring from nano to macro materials for regenerative medicine of bones and teeth (stem cells regenerative orthopedic and dental medicine) for example, and engineering of multifunctional biointerfaces and biotemplating. The symposium will bring together researchers from chemical, physical sciences and bio - science and - nanotechnology biomaterials for nanomedicine and engineering bio - electronic, - photonic, - magnetic nanosystems to discuss the latest advancements.

Proposed subjects for discussions at this event have actuality for Investigators of the EU MPNS, MP COST Actions on 2015 - 2018, for example, the Action MP 1005 "From nano to macro biomaterials (design, processing, characterization, modeling and applications to stem cells regenerative orthopedic and dental medicine - NAMABIO)

A special Young Researcher session for Advanced Researchers (Post-Graduate, PhD and Graduate students' presentations) is planned at the symposium's second day -Young Scientist FORUM. Thank you in advance for your special message - asking to include your submitted abstract for keynote presentation at this session. Contact us nanobiotech@bigmir.net.

**Hot topics to be covered by the symposium:**

- from biological supramolecular materials to bio - inspired and - mimetic material synthesis;
- bioinspired synthesis of inorganic nanoparticles (NPs), systems;
- bio-hybrid biomedical nanomaterials: biosynthesized, bioimmobilized and biointegrated inorganic nanoparticles, carbon and bioimmobilized carbon supramolecules;
- 3D molecular imprinting biological cell structures and biomimetics ones as scaffolds in tissue engineering
- electronic, photonic and magnetic functions of biosupramolecules (nucleic acids, virus, marine plants proteins, pigments) and mimetic analogs: adaptation to human systems functions for biomedical nano - systems, - robotic devices designing, for example, molecular robot - DNA motor "robotic" molecule into living cell; Special - Neuroelectronics.
- biosensing characterization for medical and environmental biotechnologies;
- biomimetic analogs functions in compare to bionic, photonic & magnetic functions for natural systems.

**List of Keynote Presenters (Keynote Forum):** Prof. Bert Muller, Switzerland; Acad. Prof. Lei Jiang (China); Professors Insung S. Choi (Korea); Andreas Schöber & Manuela Schiek (Germany); Osamu Suzuki & Masaru Tanaka, Yoshikatsu Akiyama, Shigeon Takenaka, Koichi Kato, Hideaki Yamamoto (Japan); Em. Stratakis (Greece); Johannes Heitz (Austria); Stanislaus S. Wong (US); Prof. Dr. Arzume Erdem (Turkey); Professors Shutao Wang & Bo Zhu (China); Prof. Peilin Chen (Taiwan); Carolyn A. Koh (US); Richard B. Jackman, Patrizia Ferretti (UK); Dr. Grazia Maria Lucia Messina & Emanuela Gatto, Prof. Silvia Giordani (Italy); Prof. Stephen J. Picken (The Netherlands); Professors Reshef Tenne, Gil Rosenman & Yael Hanein (Israel); Paula E. Colavita (Ireland); R. Bruce Weisman (US); Dr. Donata Landolo (France)

**List of Invited Presenters (Special Invited Session):** Dr. Pavel Dydio & Dr. Federica Fiorini, Prof. Frederic Guittard (France); Dr. Paolo Perna & Jan Siegel (Spain); Dr. Anthi Ranella (Greece); Dr. Nikos Tsierekas, Katharina Brassat (Germany); Dr's. Yeukuang Hwu (Taiwan); Jau-Ye-Shu (Switzerland); Dr's Sabrina Kirner, Joern Bonze, Ph. Commanns, Paul Wolff (Germany); Dr. Bojena Sikora & Roman Major (Poland); Tomas Werzer (Austria); Dr's Ana Mariado Espinto Santo (Brazil); Nanasahed D. Thorat (Ireland); Olena Shynkaruk (Canada); Federico Zen, Joana M. Vasconcelos (Ireland); Marzia Buscena (Switzerland); Luciana Daniela Trino (Brazil); Nadezda Lapshina (Israel); Ya-Qiong & Ao Zhang (China); Dr. Alica C. Taylor (UK); Sharad Kharel & Yong Bing Chong (Singapore).

**List of invited scientific committee members:** Prof. J.-M. Lehn (France); Prof. Beat Loeffler & Patrik Hunziker (Switzerland); Prof. Dr. Olmar D. Wiestler & Uwe Ritter, Beate Strehlitz (Germany); Olle Inganäs & Eric D. Glowacki (Sweden); Bo Zhu (China); Frank Tancret, Karsten Haupt (France); G. Marletta (Italy); Robert O. Ritchie & Stanislaus S. Wong (US); Duncan S. Sutherland (Denmark); Tatsuo Arai (Japan); Julian R. Jones (UK); Dr. O. Ivanyuta (Ukraine); R. Bruce Weisman (US).

**Symposium Organizers:****Arzum ERDEM**

Ege University, Faculty of Pharmacy,  
Analytical Chemistry Department,  
35100 Bornova, Izmir, Turkey  
[arzume@hotmail.com](mailto:arzume@hotmail.com)  
[arzum.erdem@ege.edu.tr](mailto:arzum.erdem@ege.edu.tr)

**Peter SCHARFF**

Institute for Chemistry and  
Biotechnology, Technical  
University of Ilmenau  
Weimarer Strabe 25 (Curiebau),  
D-98 693 Ilmenau, Germany  
[peter.scharff@tu-ilmenau.de](mailto:peter.scharff@tu-ilmenau.de)

**Peilin CHEN**

Research Center for Applied  
Sciences  
Academia Sinica, Taiwan, 128,  
Sect.2 Academia Rd, Taipei,  
Taiwan 115  
[peilin@gate.sinica.edu.tw](mailto:peilin@gate.sinica.edu.tw)

**Eugenia BUZANEVA**

Taras Shevchenko National University of  
Kyiv  
NASU "Physical and Chemical Material  
Science Centre"  
Volodymyrs'ka Str. 64/13, 01601, Kyiv,  
Ukraine  
[emrs@univ.kiev.ua](mailto:emrs@univ.kiev.ua)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

Surfaces and interfaces play key roles for the properties of multiphase nanostructured materials. Understanding and controlling interfaces is crucial for developing new functionalities. Thus, we aim at assembling experts in growth, characterization, and applications in interface mediated effects to stimulate advances in this field.

Advances in nanofabrication technologies are fueling the increasing interest in well-controlled multilayered thin films or nanocomposites. The unique properties of surfaces and interfaces, particularly between materials with dissimilar properties, can lead to new and improved multifunctional properties. However, the complexity of interfaces and the difficulty to study buried structures, makes it difficult to unravel the correlation between the interfaces and the enhanced properties of these materials, resulting in slowing down the progress towards advanced applications and devices. Thus, this Symposium is aimed at bringing together experts in the different aspects of "Surfaces and Interfaces of in Multilayered Thin Films and Nano-composites" ranging from fabrication and characterization, to devices. Given the multifunctional character of this type of materials, special emphasis will be made to attract experts in diverse functional properties (e.g., magnetic, optic, mechanical). Thus, the Symposium will serve as an advanced forum to exchange key information on the most relevant aspects of multiphase nanostructured materials and to discuss the pathways of this field towards applications though fundamental understanding (both experimental and theoretical) and advanced characterization. Special emphasis will be put on the following topics:

- Advanced nanofabrication technologies for both nanoparticulate and multilayered systems
- State-of-the art characterization techniques
- Effects of surfaces, interfaces and grain-boundaries on different properties (e.g., magnetic, optic, mechanical and so on) of nanomaterials
- Broad range of functional properties and combinations of functionalities (e.g., semiconducting, magnetic, ferroelectric, thermoelectric, optical)
- Nanometric control of surfaces, interfaces and grain-boundaries in the fabrication process to tailor properties and functionalities.
- Controlled defect generation in epitaxial multilayered samples as a strategy to understand properties of nanocomposite samples.
- Novel designed functionalities arising from interface coupling (e.g., multiferroics)
- Interfaces between 2D materials (e.g., graphene, MoS<sub>2</sub>).

**Hot topics to be covered by the symposium:**

- Novel technologies to fabricate nano-materials
- New approaches to study buried interfaces
- Multifunctional materials
- Interface-based new or enhanced properties
- Materials for flexible electronics
- Proximity effects
- Organic/inorganic interfaces
- Interfaces between 2D materials
- Interfaces involving topologically protected states

**List of invited speakers:**

- Ivan Shuller (UCSD, San Diego, USA)
- Jordi Sort (Univ. Autònoma de Barcelona, Bellaterra, Spain)
- Phillip King (Univ. of St. Andrews, St. Andrews, UK)
- Katherine Develos-Bagariniao (AIST, Tsukuba, Japan)
- Julien Varignon (Unité Mixte de Physique CNRS Thales, Paris, France)
- Axel Hoffmann (Argonne Nat. Lab., Argonne, USA)
- Patrice Miska (Univ. Lorraine, France)
- Yukiko Takamura (JAIST, Nomi, Japan)
- Michihiro Ohta (AIST, Tsukuba, Japan)
- Dario Narducci (Univ. Milano Bicocca, Milano, Italy)
- Darko Markovic (Jožef Stefan Inst., Ljubljana, Slovenia)
- Kanishka Biswas (JNCASR, Bangalore, India)
- Pavlo Zubko (London Center of Nanotechnology, London, UK)
- Reji Philip (Raman Res. Inst., Bangalore, India)
- Shunichi Arisawa (NIMS, Tsukuba, Japan)
- Peter Normile (Univ. Castilla la Mancha, Ciudad Real, Spain)
- Stefania T. Grecea (Univ. Amsterdam, Amsterdam, Netherlands)

**List of scientific committee members:**

- Pier Carlo Cagliari (Univ. Cagliari, Cagliari, Italy)
- Paolo Mele (Shibaura Inst. Tech., Tokyo, Japan)
- Alberto Lopez-Ortega (CIC nano GUNE, Donostia, Spain)
- Manuel Bibes (Unité Mixte de Physique CNRS-Thales, Palaiseau, France)
- Marta Estarder (Univ. de Toulouse, Toulouse, France)
- Alejandro G. Roca (Catalan Inst. of Nanoscience and Nanotechnology, Barcelona, Spain)
- Lakshmi Reddy (SVD College, Cuddapah, India)

**Symposium Organizers:****Josep NOGUÉS**

Catalan Institute of Nanoscience and Nanotechnology  
Campus UAB 08193  
Bellaterra (Barcelona) Spain  
[Josep.Nogues@icn2.cat](mailto:Josep.Nogues@icn2.cat)

**Satoru KANEKO**

KISTEC (Kanagawa Institute of Industrial Science and Technology)  
705-1 Shimo Imaizumi, Ebina,  
Kanagawa 236-0435 Japan  
[satoru@kanagawa-iri.jp](mailto:satoru@kanagawa-iri.jp)

**Tamio ENDO**

Sagamihara Surface Laboratory  
867-24 Tabata-ueno, Anoh,  
Tsu, Mie 514-2325, Japan  
[endotamio@yahoo.co.jp](mailto:endotamio@yahoo.co.jp)

**Jacobo SANTAMARIA**

GFMC, Depto. de Física de Materiales, Facultad de Física, Universidad Complutense  
28040 Madrid; Spain  
[jacsan@fis.ucm.es](mailto:jacsan@fis.ucm.es)

**Hanns-Ulrich HABERMEIER**

Science Consulting International  
Niersteinerstr 28 D 70499 Stuttgart  
Germany  
MPI for Solid State Research  
Heisenbergstr. 1 D 70569  
Stuttgart, Germany  
[huh@fkf.mpg.de](mailto:huh@fkf.mpg.de)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

Superconductivity in two-dimensional (2D) layered materials is currently one of the most attractive research subjects in solid state physics. One of keys for emergence of superconductivity is a carrier doping. In this symposium, we exchange the information of the superconductivity of carrier-accumulated 2D layered materials and discuss the future perspective.

This symposium will provides the forum of discussion on superconductivity in two-dimensional (2D) layered materials. The superconductivity is currently one of the most attractive and exciting research subjects in solid state physics because many superconductors with high superconducting transition temperatures have been successfully synthesized using the 2D layered materials. One of keys for emergence of superconductivity is a carrier doping of the 2D layered materials. The carrier doping has been performed not only by chemical methods such as metal-doping and element substitution of precursor material, but also by electrostatic / electrochemical methods. Furthermore, superconductivity which emerges from the interface between two 2D layered materials is also very attractive. Thus, the 2D layered materials have provided a fruitful research stage for realization of superconductivity. In addition to this, the superconducting properties of 2D layered material may provide a very exciting physics from viewpoint of dimensionality and pairing mechanism, in particular the superconductivity of 2D layered materials, which are classified as 'topological insulator and Weyl semimetal', is very exciting; the superconductivity often emerges under high pressure. Special emphasis will be put on the following subjects:

- Superconductivity produced by metal doping of 2D layered materials
- Superconductivity produced by electrostatic / electrochemical carrier doping of 2D layered materials
- Interface superconductivity in 2D layered materials
- Emergence of superconductivity from topological insulator and Weyl semimetal
- Superconductivity of 2D layered materials under extreme condition
- Syntheses of new 2D layered materials for superconductivity

**Hot topics to be covered by the symposium:**

- Superconductivity of metal-doped Fe-based materials
- Emergence of superconductivity in transition metal dichalcogenides by electrostatic carrier doping
- Interface superconductivity
- Topological superconductor
- Emergence of high superconductivity under high pressure
- Dimensionality and pairing mechanism of superconductivity

**Symposium Organizers:****Roman PUŹNIAK**

Institute of Physics, Polish Academy of Sciences  
Aleja Lotników 32/46, PL-02668  
Warsaw, Poland  
[puzni@ifpan.edu.pl](mailto:puzni@ifpan.edu.pl)

**Yoshihiro KUBOZONO**

Research Institute for Interdisciplinary Science,  
Okayama University  
Tsushima-naka 3-1-1, Kita-ku,  
Okayama 700-8530, Japan  
[kubozono@cc.okayama-u.ac.jp](mailto:kubozono@cc.okayama-u.ac.jp)

**Jianting YE**

Zernike Institute for Advanced Materials, University of Groningen  
Nijenborgh 4, 9747AG Groningen,  
The Netherlands  
[j.ye@rug.nl](mailto:j.ye@rug.nl)

**Hugo KELLER**

Institute of Physics, University of Zurich  
Winterthurerstrasse 190, CH-8057 Zürich,  
Switzerland  
[keller@physik.uzh.ch](mailto:keller@physik.uzh.ch)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

In layered systems different electronic degrees of freedom compete to result in self-organized textures with ranging scales. In such cases the functional properties are described by these defects. Thematic meetings are common, however, EMRS is an ideal platform to discuss different functional properties originating from their layered structural topology.

Various metal oxides/chalcogenides/pnictides with layered structure exhibit interesting and useful functional properties including high temperature superconductivity and giant thermoelectric performance. In these cases, the structural topology is deeply related to strong fluctuations of valence state and local bond. The layered structure topology of the functional materials is important also due to the fact that electronic degrees of freedom in the layered structures have strongly fluctuating character and the phases with charge (or magnetic order), coexisting with metallic (or superconducting) states can provide an effective mechanism for non-conventional phenomena. On the applied side, layered structures permit to have tuning of properties through external parameters as doping/intercalation, pressure, strain, electric and magnetic fields. This is of key interest for developing new materials through 'control and manipulation' for desired properties. Here, the focus is to discuss recent advances in the layered functional materials including emerging superconductors in which inhomogeneous ground state plays an important role. In particular quantitative characterization of these materials is a challenging task requiring space and time resolved experimental tools applied under extreme conditions (e.g. pressure, electric and magnetic fields). The symposium welcomes contributions based on theoretical, experimental and applied aspects of the physics, chemistry, materials science on the hot topics given below.

**Hot topics to be covered by the symposium:**

- Physics and chemistry of layered thermoelectric materials
- Defect chemistry of layered pnictides and chalcogenides
- Layered ferroelectrics and quantum paraelectrics
- Pressure induced phases in layered materials
- Intrinsic structure of layered functional materials
- Emerging layered functional materials
- Layered excitonic insulators

**List of scientific committee members:**

- Y. Aoki, TMU Tokyo
- A. Bansil, Northeastern Boston
- L. Degiorgi, ETH Zurich
- L. Forro, EPFL Lausanne
- T. Katsufuji, Waseda Tokyo
- Y. Koike, Tohoku Sendai
- C. Panagopoulos, NTU Singapore
- T. Schmitt, PSI Zurich

**Symposium Organizers:****Naurang SAINI**

Sapienza Università di Roma, Dipartimento di Fisica  
P. le Aldo Moro 2 00185 Roma, Italy  
[naurang.saini@roma1.infn.it](mailto:naurang.saini@roma1.infn.it)

**Takashi MIZOKAWA**

Waseda University, Department of Applied Physics  
Tokyo 169-8555, Japan  
[mizokawa@waseda.jp](mailto:mizokawa@waseda.jp)

**Siddharth S. SAXENA**

Cambridge University  
Quantum Matter Group  
Cavendish Laboratory  
JJ Thomson Avenue  
Cambridge CB3 0HE, UK  
[sss21@cam.ac.uk](mailto:sss21@cam.ac.uk)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)



**Introduction and scope:**

Functional materials are of fundamental importance for the advances of new technologies. The objective of this symposium is to discuss the state of the art of atomic-scale simulative and experimental protocols to design novel functional nanostructured materials.

Nanostructured materials are essential building blocks for the fabrication of new devices for energy harvesting/storage, sensing, catalysis, magnetic and optoelectronic applications. However, due to the increase of technological needs, it is essential to identify new functional materials and improve the properties of the existing ones. Device performance can be enhanced tailoring the properties of materials at the nanoscale. Intensive research activities have been devoted to the synthesis of nanomaterials and to the characterization of their properties during the last years. However, the discovery of novel functional materials – non-linear photonic crystals, multiferroics, layered Van der Waals and perovskite-like heterostructures, nanotubes, functionalized surfaces, thin films, interfaces, etc. – requires that we understand the atomic structural principles governing the response to external stimuli. In this perspective, the symposium will focus on the recent developments of design strategies for smart materials. Particular emphasis will be made on synergistic investigations involving experimental, materials informatics, and computational approaches, which can provide the fundamental understanding of these materials as well as new insights necessary to guide and accelerate the search of materials with targeted functionalities. The symposium will be a unique opportunity to bring together experimental and computational researchers from various communities (physicists, chemists, engineers, computational and materials informatics scientists) who could pave the way to a new generation of functional materials.

**Hot topics to be covered by the symposium:**

- Design of 2D nanomaterials (nanoparticles, nanotubes, Transition Metal Dichalcogenides)
- Design of 3D nanomaterials (molecular crystals and perovskite-based materials for energy harvesting/storage devices)
- Layered heterostructures and interfaces
- Quantitative prediction of structural response to external stimuli
- Catalytic, sensing, electronic, photonic and optoelectronic applications
- Instrumentation and analysis technique development (hardware, software)

**List of invited speakers:**

- Pablo Ordejón, Institut Català de Nanociència i Nanotecnologia, Spain
- Cesare Franchini, Technische Universität Wien, Austria
- Alessandro Stroppa, CNR-SPIN L'Aquila, Italy

**List of scientific committee members:**

- David Lewis, University of Manchester, UK
- Steven May, Drexel University, USA
- Hongbin Zhang, Technische Universität Darmstadt, DE
- Michele Saba, Università di Cagliari, IT
- Spyros Yannopoulos, Institute of Chemical Engineering Sciences, GR

**Symposium Organizers:****Antonio CAMMARATA**

Czech Technical University in Prague,  
Department of Control Engineering  
Karlovo náměstí, 13, 121 35, Prague 2, Czech  
Republic  
[cammaant@fel.cvut.cz](mailto:cammaant@fel.cvut.cz)

**Remedios CORTESE**

Università degli Studi di Palermo,  
Dipartimento di Fisica e Chimica  
Viale delle Scienze ed.17, 90128, Palermo, Italy  
[remedios.cortese@unipa.it](mailto:remedios.cortese@unipa.it)

**Danilo PUGGIONI**

Department of Materials Science and  
Engineering, Northwestern University  
2220 Campus Drive, Evanston, Illinois 60208, USA  
[danilo.puggioni@northwestern.edu](mailto:danilo.puggioni@northwestern.edu)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

The recent experimental and technological advances have allowed for a better description of materials physical properties implying multiple technological applications. However, those advances also open multiple questions that require theoretical interpretations. The goal of the present symposium is to present to European Materials Community the most recent advances in theoretical and simulation methods to characterize materials.

Theory and simulations in Physics represent nowadays an important contribution to the European Materials Research. Indeed, theoretical characterization from either first principles or approaches that are more empirical are likely to provide important information in parallel to the experimental determinations. In that respect, the scope of this symposium aims at exploring the wide range of theoretical methods developed in the recent years. An important part will be devoted to theoretical and numerical developments to overcome nowadays-physical challenges. Those approaches range from atomic level and first principles methods to mesoscopic physics through tight-binding models and molecular dynamics simulations. In addition, we will consider Quantum Monte-Carlo or hybrid QM/MM methods for larger or biological systems. In parallel, machine-learning algorithms for material screening would give a nice opening on future methodological perspectives in Material Science. Regarding the physical properties, the symposium will focus on standard material properties like structure, electronics, optics or magnetism, thermodynamics, but also on more specific aspects like electronic, spin or heat transport, thermoelectricity, renewable energies and energy harvesting and storage, electron-phonon coupling, mass transport, phonon dynamics. Another important part of the symposium should be devoted obviously to applications in Material Science. Hence, another goal of the symposium is to present a general overview of theory and simulation contribution in the field. For example, we will consider applications in nanosciences and nanostructure materials, bulk, surfaces and interfaces, disordered and low-dimensional materials including graphene and bi-dimensional materials, organic molecules on metallic or oxide surfaces, magnetic and spin cross-over molecules, self-assembled molecular networks, and biological molecules. Applications for future electronics also play an important role in the material community. Therefore, the symposium will be opened to nanoelectronics and molecular electronics and spintronics. In summary, this symposium will provide a wide and unique state of the art overview on the theoretical methods used to describe and characterize materials properties. It aims at having equilibrated contributions from important researchers in the community and young researcher to favor discussions and exchange, and draw some perspectives on the next challenges in the field.

**Hot topics to be covered by the symposium:**

- methods and developments in first principle and semi-empirical methods
- graphene and 2D materials
- molecular electronics and spintronics, magnetism
- electronic transport and devices simulations, optical properties
- electron-phonon coupling, thermoelectricity
- metal/organic interfaces and framework
- biological molecules and QM/MM simulations
- thermodynamics
- renewable energies and storage
- mass and heat transport
- surfaces and interfaces
- disordered and hybrid organic-inorganic materials

**List of invited speakers:**

- Prof. Young-Han Shin (Ulsan University, Dept of Physics, Ulsan, South Korea)
- Dr. Assil Bouzid (EPFL, Lausanne - Switzerland)
- Prof. Thomas Frederiksen (Donostia International Physics Center, San Sebastian, Spain)
- Dr. Carlo Massobrio (IPCMS, Strasbourg, France)
- Prof. Fabrizio Cleri (IEMN, Lilles, France)
- Prof. Rafal Kozubski (Jagiellonian University, Solid States Physics Dpt., Krakow, Poland)
- Dr. Michal Hermanowicz (Poznan University of Technology, Institute of Physics, Poznan, Poland)

In order to attract a wide range of talented researchers, and in particular young researchers, we will also select more invited talks among the best-submitted abstracts.

**List of scientific committee members:**

- Dr Tim Frolov, Lawrence Livermore National Laboratory, USA
- Prof. Giorgos Evangelakis, University of Ioannina, Greece
- Prof. Mebarek Alouani, IPCMS, Strasbourg University, France
- Dr Xavier Blase, Neel Institute, Grenoble, France
- Dr Daniele Passerone, Empa, Switzerland
- Prof. Hélène Zapolsky, Group of Material Physics (GPM, UMR 6634) University of Rouen Normandy

**Symposium Organizers:****Yannick J. DAPPE**

Service de Physique de l'Etat Condensé (SPEC – CNRS – CEA Saclay)  
Bât. 771 Orme des Merisiers  
F-91191 Gif-sur-Yvette France  
[yannick.dappe@cea.fr](mailto:yannick.dappe@cea.fr)

**Elena LEVCHENKO**

Priority Research Centre for  
Computer-Assisted Research Mathematics and  
its Applications (CARMA)  
School of Mathematical and Physical Sciences,  
Faculty of Science  
The University of Newcastle  
University Drive, Callaghan, NSW 2308, Australia  
[elena.levchenko@newcastle.edu.au](mailto:elena.levchenko@newcastle.edu.au)

**Guido ORI**

Institut de Physique et Chimie des Matériaux de  
Strasbourg  
(IPCMS, CNRS - University of Strasbourg)  
23 Rue du Loess, F-67034 Strasbourg, France  
[guido.ori@ipcms.unistra.fr](mailto:guido.ori@ipcms.unistra.fr)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

This symposium will cover:

- (i) Nanomaterials Synthesis: From 0D, 1D, 2D, and 3D, Multifunctional Hybrids.
- (ii) Investigations: Structures and Properties, Analytical and Computational Modelings.
- (iii) Applications: (a) Electronics- Gas/Pressure/Chemical/Biological Nanosensings, (b) Photonics/Plasmonics/Photovoltaics/Lightening Technologies/Lasers, (c) Energy/Piezotronics/Green Energy (e) Photocatalysis, Water Purification, (f) Biomedical Nanomaterials, (g) Advanced technologies.

Nanostructures, particularly from the inorganic metal oxides, organic, carbon, polymer, organic-inorganic hybrid and all-inorganic perovskites etc. family, are very important material candidates because of their surface-to-volume ratio and morphology-dependent extraordinary properties suitable for various advanced technologies. The ongoing deployments in the direction of 0D (quantum dots), 1D (hybrid nanowires), 2D (from new semiconductors) and 3D networked materials have further become very relevant towards various applications, due to their excellent nanoscale features and their simplicity of utilization. Due to their compact synthesis forms, they can be easily handled or integrated in the desired manner in devices or sensors. The 0D, 1D, 2D nanostructures from noble metals (Au, Ag, Cu, etc.) have found immense applications in sensing, biomedicine, waveguides and telecommunication, etc. Nanostructures from metal oxides are very interesting (fundamental as well applied) materials due to their bandgap position (intermediate between metals and insulators), suitable for various advanced technologies. When these metal oxides and metals are combined in hybrid nanomaterials, they further become very relevant in terms of understanding the properties and, consequently, advanced applications. The carbon nanostructure family, i.e., fullerenes, CNTs (MWCNTs), graphene, graphene oxide (GO), carbon dots etc., have shown very strong potential ranging from fundamental properties to advanced energy applications. Hence they have been the subject of huge research attention in the last couple of decades. Recent developments in the direction of 3D carbon networks have opened an entirely new dimension in nanotechnology research. Research on 3D soft ceramics, from metal oxides interconnected networks, which is currently in the main stream research focus, is very important, because it can bring towards nanotechnology-related applications in real life. Recently there has been a growing research attention in the field of low-dimensional perovskites, especially perovskite nanocrystals for various potential applications such as LEDs, lasers and photovoltaics.

Appropriate growth strategies of different structures (0D, 1D, 2D and 3D) using simple methods, understanding their properties, their applications in different directions, etc. are still key issues. Interdisciplinary research platforms are required, equipped with: (i) synthesis groups for developing different nanostructures, (ii) theoretical/computational frameworks to model/analyze/simulate towards a better understanding of structure-property relations, and (iii) application experts, who can accordingly utilize these materials in various applications, which will be actually the main aim of the proposed symposium.

**Hot topics to be covered by the symposium:**

- Hybrid Metal Oxide Materials (0D, 1D, 2D, 3D): Synthesis & Characterizations, Structure-property relations, Analytical/Simulation studies, Applications: Electronics-Chemistry-Energy-Sensing-Lightening-Biomedical-Environmenta - Applications,
- Plasmonic Nanostructures: Synthesis & Characterization, Computational Modeling, Sensing and Nanophotonics Applications
- Carbon Family (Fullerenes to 3D graphene): Fabrication & Characterizations, Structure-property relations, Simulations studies, Applications: Nanoelectronics-Sensing-Supercapacitor-Batteries-Energy.
- Quantum Dots: QDs are recently gaining huge interests and one session of the symposium will be devoted to only QDs.
- Low-dimensional Perovskites: Shape-controlled synthesis of perovskite NCs (QDs, Nanoplatelets, nanowires, thin films) and applications (LEDs, Lasers, Photodetectors, Transistors and Photovoltaics).
- Synchrotron radiation/Ion beam-based material characterization and engineering

**List of invited speakers:**

- Rodney S. Ruoff, IBS-UNIST, South Korea
- Oliver G. Schmidt, IFW Dresden
- Sotiris E. Pratsinis, ETH Zurich, Switzerland
- Zhong Lin Wang, Georgia Tech, USA
- Kostya K. Ostrikov, QUT, Brisbane, Australia
- Chennupati Jagadish, ANU, Australia
- Sanjay Mathur, Köln University, Köln, Germany
- Ali Khademhosseini, University of California Los Angeles, USA
- Jorge Pérez-Juste, University of Vigo, Spain
- Kourosh Kalantar-Zadeh, RMIT University, Australia
- Jan Seidel, University of South Wales, Australia
- Tae Young Kim, Gachon University, South Korea
- Vipul Bansal, RMIT University, Australia
- H. Amekura, National Institute for Materials Science, Japan
- G. Mattei, Padova University, Italy
- Patrik Kluth, Australian National University, Australia
- Søren P. Madsen, Aarhus University, Denmark
- Andrea Armani, University of Southern California, USA

**List of scientific committee members:**

- Prof. Rainer Adelung, Germany
- Prof. Franz Faupel, Kiel, Germany
- Prof. Lorenz Kienle, Germany
- Prof. Carsten Ronning, Germany
- Prof. Horst-Günter Rubahn, Denmark
- Prof. Jörg Hübner, Denmark
- Prof. Amit Bhatnagar, Finland
- Prof. Suneel Srivastava, India

**Symposium Organizers:****Yogendra MISHRA**

Institute for Materials  
Science, Kiel University  
Kaiserstr. 2, 24143, Kiel,  
Germany  
[ykm@tf.uni-kiel.de](mailto:ykm@tf.uni-kiel.de)

**Jost ADAM**

NanoSYD, Mads Clausen  
Institute, University of  
Southern Denmark  
Alsion 2, DK-6400  
Sønderborg, Denmark  
[jostadam@mci.sdu.dk](mailto:jostadam@mci.sdu.dk)

**Mady ELBAHRI**

School of Chemical  
Technology, Aalto University  
Kemistintie 1, C321, 00076  
Aalto, Finland  
[mady.elbahri@aalto.fi](mailto:mady.elbahri@aalto.fi)

**Lakshminarayana POLAVARAPU**

Department of Physics, Ludwig-  
Maximilians-University (LMU)  
Amalienstr. 54, D-80799 Munich,  
Germany  
[l.polavarapu@physik.uni-muenchen.de](mailto:l.polavarapu@physik.uni-muenchen.de)

**Devesh Kumar AVASTHI**

Amity University of  
Nanotechnology  
J2, Room No 306, 3rd Floor,  
Noida, India  
[dkavasthi@amity.edu](mailto:dkavasthi@amity.edu)

**Introduction and scope:**

Recent advances in the synthesis of nanoparticles (NPs) and in atomic-scale characterization, coupled with insights from theoretical modelling, have opened exciting possibilities to tailor knowledge-based NPs for many applications, such as catalysis, plasmonics, sensors, magnetism, nanomedicine.

The number of scientific papers with "nanoparticle" as keyword has increased almost linearly in the last ten years from ~13000 in 2006 to ~46000 in 2016. This impressive worldwide interest stems from the striking scientific appeal of nanoparticles (NPs), which constitute a bridge over the troubled waters between the atomic and bulk worlds, as well as from their actual or potential applications in fields as diverse as catalysis, optics, magnetism, drug delivery. The preparation of NPs is a crossroad of materials science where chemists, physicists, and engineers frequently meet, leading to a continuous improvement of existing techniques and to the invention of new methods. This symposium will bring together leading experts on advanced techniques for nanoparticle synthesis, in order to promote cross fertilization and to inspire progresses in the control of nanoparticle size, shape, composition and functionalization as well as in the fabrication of NPs with complex morphologies. Characterization techniques with high spatial resolution, spectroscopic capability and chemical sensitivity are an essential tool not only to investigate the output of the synthesis procedures but also to elucidate the structure-property relationships of the NPs. For this reason, this symposium will also attract leading experts in state-of-the-art (or beyond) characterization techniques for NPs structural/chemical analysis. This interdisciplinary forum will be completed by the participation of renowned experts in theoretical modelling and simulation of NPs structure and properties, which is of paramount importance both for understanding atomic and electronic structure and to predict non-trivial unexpected behaviors and new phenomena. The symposium will pay particular attention to new directions in technological applications. Given the "hot topic" nature of the symposium and the unique interdisciplinary discussion opportunities it will provide, we expect a numerous and high quality attendance.

**Hot topics to be covered by the symposium:**

1. Recent development in nanoparticle synthesis techniques
  - Chemical
  - Lithographic
  - Bottom-up
  - Combinatorial
2. Structural / chemical analysis of nanoparticles
  - Spectroscopic techniques
  - High resolution microscopy/chemical mapping
  - Advanced scattering techniques
3. Theoretical modelling of nanoparticles
  - Atomic ordering and electronic structure
  - Dynamical processes, excitations, reactions
  - New algorithms and calculation strategies
4. Technological applications of nanoparticles
  - Structure-property relationships
  - Theoretical predictions vs experiment

**Symposium Organizers:****Luca PASQUINI**

Department of Physics and Astronomy, University of Bologna  
v.le C. Bertini-Pichat 6/2, 40127 Bologna, Italy  
[luca.pasquini@unibo.it](mailto:luca.pasquini@unibo.it)

**Hannes JÓNSSON**

University of Iceland  
VR-III, Hjarðarhagi 2-6, Iceland  
[hj@hi.is](mailto:hj@hi.is)

**Bjørn C. HAUBACK**

Institute for Energy Technology  
Instituttveien 18, NO-2007 Kjeller, Norway  
[bjorn.hauback@ife.no](mailto:bjorn.hauback@ife.no)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)



**Introduction and scope:**

The symposium covers all the scientific and technological aspects related to the synthesis, the physical/chemical characterizations, the material properties of semiconductor or metallic nanodots and nanowires, with special emphasis on the multiscale organization and spontaneous auto-organization and directed self-assembly of ordered structures, in view of their integration in functional devices.

Due to their appealing size dependent properties, semiconductor and metallic nano-objects (nanocrystals, nanowires) have been predicted to be used as technological boost in various fields including nano- electronics, optoelectronics, photonics, magnetism, phononics, plasmonics, advanced sensing and photovoltaics. The capability to control size, shape, interface, composition, and doping of these nano- objects is crucial to finely tailor their properties. Nevertheless, the implementation of these elemental building blocks into functional devices at nano-scale requires precise control of the organization of the nano- objects in terms of density and relative positioning within well-organized structures, both in plane and in depth. The feasibility to fabricate ordered arrays of nano-objects and to precisely organize the nano-objects on appropriate substrates or inside various matrices is the key issue to support the technological development of new device concepts with predictable characteristics based on these novel nano-materials. Following very successful symposia organized in 2012, 2014 and 2016, this symposium intends to draw on previous experience. In particular, a special focus on multiscale fabrication, directed organization and auto-organization is requested by the scientific community working in the field of nanotechnology. The symposium will provide the opportunity to present insights on advanced nano-structures and nano-device architectures at different stages of development. The symposium is open to all the experimental and theoretical results on organized nano-structures, aiming to control the main parameters of the nano-objects in relation with their tunable properties and functionalities. Thus, the symposium is conceived as a platform that gathers researchers coming from academia and industry and promotes interactions among scientists and engineers working on all the aspects of semiconductor and metallic nano-structures, ranging from fundamental physics and material science issues up to the technological implementation toward the final application in functional devices.

**Hot topics to be covered by the symposium:**

- Synthesis of nano-structures: Top-down and Bottom-up processes
- Nano-structures on surface and in volume
- Doping issues in nano-structures
- Self and induced organization of metal and semiconducting nano-structures
- Advanced methodology to control synthesis, positioning, shape, size in nano-structures
- Organic-inorganic hybrid materials
- Semiconducting nano-structures for novel logic or memory architectures
- Light emission and optical gain in semiconductor nano-structures
- Metal and semiconducting nano-structures for energy applications: photovoltaic and thermoelectric
- Nano-structures for advanced sensing and plasmonic applications

**List of invited speakers:**

- Thomas Zentgraf (University of Paderborn, Germany), "Beam shaping with nanostructured metasurfaces"
- Wilfred G. van der Wiel (University of Twente, The Netherlands), "Evolution of functionality in disordered nanomaterial networks"
- Kevin Yager (Brookhaven National Laboratory, USA), "Formation of non-native morphologies in block-copolymer self-assembly"
- André Beyer (University of Bielefeld, Germany), "Helium Ion Microscopy: Imaging and Milling with Nanometer Precision"
- Chinedum Osuji (Yale University, USA), "Single crystals and bespoke textures in self-assembled soft materials"
- Jürgen Brugger (EPFL, Suisse), "MEMS and Nanotechnology"

**List of scientific committee members:**

- Sylvie Schamm-Chardon (CEMES-CNRS, France)
- Paolo Pellegrino (University of Barcelona, Spain)
- Federico Ferrarese Lupi (INRIM, Italy)
- Branko Pivac (Rudjer Boskovic Institute, Croatia)
- Johannes Heitmann (Technical University Bergakademie Freiberg, Germany)
- Elena Cianci (IMM-CNR, Italy)
- Stefan Guldin (University College London, UK)
- Marianna Sledzinska (ICN2, Spain)
- Stefano Brivio (IMM-CNR, Italy)
- Guilhem Larrieu (LAAS-CNRS, France)
- Sang Ouk Kim (KAIST, Korea)
- Odile Stephan (Université Paris-Sud, France)
- Pascal Normand (IMEL NCSR, Greece)

**Symposium Organizers:****Gabriele SEGUINI**

CNR-IMM, Laboratorio MDM  
Via Carlo Olivetti 2, 20864 Agrate  
Brianza Italy  
[gabriele.seguini@mdm.imm.cnr.it](mailto:gabriele.seguini@mdm.imm.cnr.it)

**Gerard BENASSAYAG**

NanoMat Group, CEMES-CNRS  
29 Rue J. Marvig 31055, Toulouse  
Cedex 4, France  
[benassay@cemes.fr](mailto:benassay@cemes.fr)

**Pawel W. MAJEWSKI**

Department of Chemistry, University  
of Warsaw  
1 Pasteur St. Warsaw, Poland  
[pmajewski@chem.uw.edu.pl](mailto:pmajewski@chem.uw.edu.pl)

**Daniel NAVARRO-URRIS**

MIND - Departament d'Enginyeria  
Electrònica i Biomèdica  
Universitat de Barcelona  
C/ Martí i Franquès 1,  
08028 Barcelona, Spain  
[dnavarro@ub.edu](mailto:dnavarro@ub.edu)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

ALD is a chemical deposition technique traditionally used in the field of microelectronics and large area displays. In recent years ALD has seen a huge evolution in terms of the materials that can be deposited, the reactors available and the applications targeted. This symposium aims at highlighting recent developments in the field of ALD of functional materials and devices and to present the ALD community to the broader materials science community.

ALD is a Chemical Vapour Deposition technique that is surface-limited and self-terminating. As a result, film thickness can be controlled very precisely to the nanometer, high aspect ratio features can be coated with a unique level of conformality, and, film homogeneity is unrivalled. ALD, with its unique characteristics, was developed in the 1970s to meet demands in the fields of microelectronics and large area displays, and these have remained its main applications, both at the lab and industrial scale, for many years. In terms of materials, metal oxides and in particular a handful of them ( $\text{HfO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{TiO}_2$ ,  $\text{ZnO}$  and  $\text{Ta}_2\text{O}_5$ ) where the sole object of ALD research. With the advent of nanotechnology, ALD has gained momentum due to the need of controlling and engineering surfaces and interfaces. As a result, the number of laboratories equipped with an ALD system has increased significantly, which has resulted in an exponential increase in the number of publications involving ALD.

ALD is nowadays a much bigger field than originally in which in addition to the classical oxides cited above, other oxides such as copper, nickel or iron oxides are being developed. ALD researchers are even tackling the deposition of complex mixed and doped oxides. This translates in new reaction chemistries being developed, including new precursors, and novel applications being targeted. A further development is the deposition of metallic coatings, and of hybrid and organic thin films thanks to the organic variation of ALD, namely, Molecular Layer Deposition (MLD). This again paves the way for new materials and applications. In addition, ALD researchers have devoted efforts to developing systems capable of depositing at higher throughput than with conventional ALD, thus making the technique more appealing for industrial application outside its traditional fields of applications. Some of the last developments related to ALD include area-selective deposition, for which different approaches are being explored, solution ALD and Atomic Layer Etching. Finally, the advancement and understanding of ALD and its mechanisms is sustained by research efforts in advanced and in situ characterization studies, in combination with modelling and simulation. The first goal of this symposium is thus to present the evolution of ALD from its original materials and fields of applications, which now include photovoltaics, energy storage, photo-splitting, catalysis, barrier layers and biomedical applications, among other.

The second objective is to bring together the ALD research and community in a dedicated symposium, as opposed to being diluted among many symposia depending of the materials, application, etc., as is currently the case in past E-MRS meetings. This symposium is meant to be the forum in which the ALD community will present the recent developments in ALD to the wider materials community. We expect it to foster many new collaborations that will lead to new materials, applications and chemistries being developed.

**Hot topics to be covered by the symposium:**

- Area-Selective ALD
- Spatial ALD and atmospheric processing, high throughput
- New reaction mechanisms, precursors and applications
- Deposition of Hybrid/Organic materials by MLD
- Modelling of reaction mechanism
- Barrier layers, protective coatings
- Energy applications (batteries, supercapacitors, solar cells, photo-splitting)
- Advanced characterization
- Energy activated ALD
- Deposition of 2D materials, sulphides
- ALD for MEMS
- Solution ALD
- Atomic Layer Etching (ALE)

**Confirmed invited speakers**

- Thomas Riedl (Universität Wuppertal, Germany)
- Angel Yanguas-Gil (Argonne National Laboratory, USA)
- Jullien Bachmann (Friedrich Alexander University, Germany)
- Erwin Kessels (Technical University Eindhoven, The Netherlands)
- Ruud van Ommen (Delft University of Technology, The Netherlands)
- Riikka Puurunen (Aalto University, Finland)
- Christoph Vallée (Laboratoire des technologies de la Microélectronique, France)
- Elsje Alessandra Quadrelli (Laboratory of chemistry, catalysis, polymers & processes, Villeurbanne, France)
- Maarit Karppinen (Aalto University, Finland)
- Marek Godlewski (Institute of Physics, Polish Academy of Sciences, Poland)
- Ola Nilsen (Department of Chemistry, UiO, Oslo, Norway)
- Anjana Devi (Ruhr-Universität Bochum)

**Confirmed members of the scientific committee**

- Elisabeth Blanquet, SIMAP-University Grenoble Alps/CNRS, France
- Nathanaelle Schneider, CNRS-IPVF, France
- Alexey Y. Kovalgin, UO Twente, The Netherlands
- Anjana Devi, Ruhr-Universität Bochum, Germany
- Marek Godlewski, Institute of Physics, Polish Academy of Sciences, Poland

**Symposium Organizers:****David MUÑOZ-ROJAS**

Laboratoire des Matériaux et du Génie Physique (Grenoble INP/ CNRS)  
3 Parvis Louis Néel, 38016, Grenoble, France  
[david.munoz-rojas@grenoble.inp.fr](mailto:david.munoz-rojas@grenoble.inp.fr)

**Seán T. BARRY**

Carleton University  
203 Steacie Building, 1125 Colonel By Drive, Ottawa, Ontario, K1S 5B6, Canada  
[sean\\_barry@carleton.ca](mailto:sean_barry@carleton.ca)

**Maria BERDOVA**

University of Twente,  
The Netherlands  
Dienstweg 1, 7522 ND Enschede  
[m.berdova@utwente.nl](mailto:m.berdova@utwente.nl)

**Christoph HOSSBACH**

Picosun Europe GmbH  
World Trade Center – Freiburger Str. 39 01187 Dresden, Germany  
[christoph.hossbach@picosun.com](mailto:christoph.hossbach@picosun.com)

## Diamond for electronic devices III

**Introduction and scope:**

Diamond grown by Chemical Vapour Deposition (CVD) or other laboratory methods is rapidly emerging as an important material for new device applications required for the 21st century. Further, large area, high purity diamond substrates have emerged over the past few years, making commercial development of devices a realistic prospect. Many applications are envisaged; in the fields of power electronics, room temperature quantum computing, bio-sensing, bio-interfaces, MEMS-NEMS and high energy radiation and particle detectors to name but a few. It has superior properties for next generation semiconductor applications such as the highest electron and hole mobilities, highest electric field breakdown strength, and a low dielectric constant. In combination with its unmatched thermal conductivity and radiation hardness many applications have been approached meanwhile, and which is at the core of this symposium. The field is rapidly evolving and it is timely to follow the successful symposia held in 2016 and 2017 with an update on progress in the field at the E-MRS Fall meeting 2018.

Several topics will be of particular interest at this meeting, although papers on all aspects of diamond technology are welcome. These include diamond for power electronics, diamond nano-electronic devices, diamond for quantum applications and diamond for bio-devices. In all cases, man-made single crystalline diamond is used either as ultra-pure layer or semiconducting by boron and phosphorus doping. The growth and deposition of high quality diamond films will therefore be a subtopic at the symposium. Quantum metrology applications (for example, magnetometry based on NV centres) is of key interest. Doping of diamond is a key topic using both boron and phosphorus. In case of phosphorus and boron doping. The symposium on "Diamond for Electronic Devices II" will include all major activities to realize high quality devices, following on from the very successful symposium at the Fall EMRS meeting in 2016.

**Hot topics to be covered by the symposium:**

- Innovative approaches for large area synthetic diamond growth (epitaxy & heteroepitaxy)
- Diamond devices for power electronics (Schottky diodes, pin, MOS, bipolar transistors).
- Efficient diamond-based UV emitters and detectors and particle detectors.
- Doping of diamond (ultra-low, transfer-doping, metallic doping) using hydrogen or metal oxides, phosphorus or boron
- The realization of ultra-pure diamond substrates
- Control-removal of surface damage on diamond substrates prior to device fabrication
- Cellular-diamond interactions for machine-brain interface applications and neurodegenerative disease studies
- Diamond for imaging and quantum computing – including fundamental studies of colour centres (NV, Ni8, Si, etc), potential quantum devices, and supporting architectures (waveguides, couplers, etc).
- Diamond films and their functionalization for sensing, imaging and separations, and for SAW, MEMS/NEMS electrochemical and photonic devices.
- Nanodiamond surface functionalization, nanodiamond chemical-biochemical sensors and nanodiamonds for biological applications

**Provisional list of invited speakers**

- Hiroshi Kawarada, Waseda University, Tokyo, JAPAN,
- Etienne Gheeraert, Institut Neel, CNRS, GRENOBLE, France
- Hiromitsu Kato, AIST, Tsukuba, Japan
- Daniel Araujo, University of Cadiz, Spain
- Fedor Jelezko, University of Ulm, Germany
- Yasuo Koide, NIRIM, Japan
- Robert Nemanich, Arizona State University, US
- Christoph E. Nebel, Fraunhofer-Institute for Applied Solid State Physics (IAF) Germany

**Symposium Organizers:****Philippe BERGONZO**

CEA-List, Saclay  
91191 Gif-sur-Yvette, France  
[Philippe.BERGONZO@cea.fr](mailto:Philippe.BERGONZO@cea.fr)

**Richard B. JACKMAN**

London Centre for Nanotechnology and Department of Electronic and Electrical Engineering, University College London (UCL), 17-19 Gordon Street, London, UK  
[r.jackman@ucl.ac.uk](mailto:r.jackman@ucl.ac.uk)

**Adam GALI**

Wigner Research Centre for Physics, Institute for Solid State Physics and Optics, Hungarian Academy of Sciences 1121 Budapest, Konkoly-Thege Miklós út 29-33, Hungary  
[agali@eik.bme.hu](mailto:agali@eik.bme.hu)

**Hitoshi UMEZAWA**

Advanced Power Electronics Research Center National Institute of Advanced Industrial Science and Technology (AIST) Midorigaoka 1-8-31, Ikeda, Osaka, 563-8577, Japan  
[hitoshi.umezawa@aist.go.jp](mailto:hitoshi.umezawa@aist.go.jp)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

Epitaxial oxide films enable a new generation of oxide electronic devices and energy applications. Materials such as Ga<sub>2</sub>O<sub>3</sub>, In<sub>2</sub>O<sub>3</sub>, and BaSnO<sub>3</sub> open up new horizons in semiconductor electronics, while ferroelectric and multiferroic perovskites bring promise of a wide range of novel devices. This symposium covers topics ranging from theory, growth, alloying, and interface/surface properties to defect characterization, optical and electrical properties, and device fabrication.

Oxides are among the materials with the widest tunability of physical properties. Well-defined oxide structures of the highest material quality are particularly interesting for the next generation of electronic devices with tailored and/or unprecedented properties. Oxide semiconductors such as ZnO, Ga<sub>2</sub>O<sub>3</sub>, In<sub>2</sub>O<sub>3</sub> and BaSnO<sub>3</sub> are being investigated for their use in optoelectronics, power electronics, 2DEG electron transport, and device gating, whereas epitaxial layers with perovskite structure (e.g. KNbO<sub>3</sub>, SrTiO<sub>3</sub>, LaAlO<sub>3</sub>, BiFeO<sub>3</sub>, and others), along with their fascinating interfaces, pave the way to novel applications that exploit their ferroelectric, multiferroic, memristive and other outstanding functional properties. Despite their great promise, there are still many challenges associated with the technological development of epitaxial oxides for electronic applications. Preparation of tailored substrates and surfaces, precise control of growth, assessment of structural properties, understanding of the role of defects and interfaces, and correlating these with the optical and electronic properties – all constitute essential prerequisites for the successful deployment of novel oxide electronic devices. A more thorough understanding of the basic processes in these materials is thus required to control the various issues along the value chain and cross-fertilization between hitherto separated research fields will be needed to provide the necessary advancement. This symposium aims to provide the corresponding platform in this respect.

The symposium is dedicated to crystalline oxide materials, particularly transparent semiconducting oxides and oxides with the perovskite or related structures, of considerable structural quality that are designated for use in electronic devices and applications. It seeks to address all relevant topics in materials development, such as thermodynamic, material, and defect modelling, preparation of substrate materials, epitaxial thin film growth (e.g. MBE, MOCVD, PLD), doping, alloying, and defect formation, surfaces and interfaces, structural properties and defects, optical, electrical and thermal properties, contacts and structuring, and device design and preparation.

**Hot topics to be covered by the symposium:**

- Ga<sub>2</sub>O<sub>3</sub> and In<sub>2</sub>O<sub>3</sub> homo- and heteroepitaxy
- (Al,Ga,In)<sub>2</sub>O<sub>3</sub> films and heterostructures
- SrTiO<sub>3</sub> and perovskite-based thin film deposition
- Ferroelectric thin films and heterostructures
- Multiferroic oxides and devices
- Approaches to memristive devices
- BaSnO<sub>3</sub> conducting layers
- All-perovskite device concepts
- Sensing with epitaxial oxide films (e.g. SAW)
- Ga<sub>2</sub>O<sub>3</sub> devices for power electronics
- Ferroelectrics on semiconductors
- Doping approaches during thin film growth
- Surface and interface characterization
- Correlation of structure/defects and properties
- Spectroscopy and transport phenomena

**Invited speakers that have already accepted:**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Ausrine Bartasyte, Univ. de Franche-Comté (FR)</li> <li>• Ingrid Cañero Infante, Institut de Nanotechnologies de Lyon (FR)</li> <li>• Andrea Caviglia, TU Delft (NL)</li> <li>• Regina Dittmann, Forschungszentrum Jülich (DE)</li> <li>• Catherine Dubourdieu, Helmholtz-Zentrum Berlin (DE)</li> <li>• Saskia Fischer, HU Berlin (DE)</li> <li>• Marcel Himmerlich, CERN/TU Ilmenau (CH/DE)</li> <li>• Man Hoi Wong, NICT (JP)</li> <li>• Fan Ren, Univ. Florida Gainesville (US)</li> <li>• Guus Rijnders, Univ. Twente (NL)</li> <li>• Sayeef Salahuddin, UC Berkeley (US)</li> </ul> | <ul style="list-style-type: none"> <li>• Jacobo Santamaria, Univ. Madrid (ES)</li> <li>• Heidemarie Schmidt, TU Chemnitz (DE)</li> <li>• Uttam Singisetti, Univ. Buffalo (US)</li> <li>• James Speck, UC Santa Barbara (US)</li> <li>• Susanne Stemmer, UC Santa Barbara (US)</li> <li>• Tae Won Noh, Seoul National Univ. (KR)</li> <li>• Hongping Zhao, Ohio State Univ. (US)</li> <li>• Holger von Wenckstern, Univ. Leipzig (DE)</li> <li>• Oliver Bierwagen, PDI Berlin (DE)</li> <li>• Lane Martin, UC Berkeley (US)</li> <li>• Takayoshi Oshima, Saga Univ. (JP)</li> </ul> |
|--|--|

**Symposium Organizers:****Matthias BICKERMANN**

Leibniz Institute for Crystal Growth (IKZ)  
Max-Born-Str. 2, 12489 Berlin, Germany  
[matthias.bickermann@ikz-berlin.de](mailto:matthias.bickermann@ikz-berlin.de)

**Ulrike DIEBOLD**

TU Vienna  
Surface Physics  
Institute for Applied Physics  
Wiedner Hauptstr. 8-10/134, 1040  
Vienna, Austria  
[diebold@iap.tuwien.ac.at](mailto:diebold@iap.tuwien.ac.at)

**Debdeep JENA**

Cornell University  
Materials and ECE Departments  
Ithaca, NY 14853 USA  
[djena@cornell.edu](mailto:djena@cornell.edu)

**Pavlo ZUBKO**

London Centre for  
Nanotechnology  
University College London  
17-19 Gordon Street, London  
WC1H 0AH, UK  
[p.zubko@ucl.ac.uk](mailto:p.zubko@ucl.ac.uk)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)



**Introduction and scope:**

Ferroic materials undergo a large variety of phase transitions and also exhibit important physical properties, many of which are used in industries world-wide. The study of their phase transitions provides useful ways to understand the origin of the properties, and thus to suggest new materials. Functionality in ferroics can be considered independently on their sizes. They are functional in the macroscopic, microscopic and nanoscopic scales in the form of single crystals, ceramics and thin films. Additionally, the role of controlled content of defects and hence the surface-bulk interrelation makes these materials scientifically exciting and perspective. At the 2018 meeting we would like to keep the scope of our last very successful symposium as in 2016. Enlarging on its previous title "Phase transitions and properties of ferroics" we propose to change to the following: "Phase transitions and properties of ferroics in the form of single crystals, ceramics and thin films". Hence we would like to recall once again what the term ferroic means. The term ferroicity has been in use for over 50 years since it was first defined, although ferroic materials have been known since the 19th century. They show the property of being able to be switched in some way. For instance, the oldest known ferroic property is that of ferromagnetism where magnetization can be switched by an applied magnetic field, leading to magnetic hysteresis. By analogy with ferromagnetism, ferroelectrics are where an electric polarization is switched by an applied electric field, again with hysteresis. A third type is that of a ferroelastic, in which the strain in a material can be switched by an applied stress. These ferroics are known as primary ferroics. One can also have multiferroics where two or more such ferroic properties are present. In practice this term seems to have been applied mainly to materials in which a magnetization can be switched by an applied electric field, and vice versa. It can be appreciated therefore that ferroics provide a rich field of materials with interesting properties and behaviour, many of which have very important industrial use. Moreover, ferroics also tend to exhibit subtle phase transitions where the crystal structure changes according to group-subgroup symmetry relationships, and at which some properties adopt enhanced values. By studying these phase transitions and how the structures of the ferroics change one can often find what it is in these materials that is responsible for the property in question. It is clear that we need to study not only long-range structure, but also microstructure. This symposium will bring together experts working at the theoretical and experimental level. At the same time, remembering nowadays broad applications of ferroics, one can still speak of their functionality. Thus the symposium will also concentrate on this functionality independently on sizes of ferroics. It means they are functional at macroscopic, microscopic and nanoscopic scales in the form of single crystals, ceramics and thin films. Additionally, the role of controlled content of defects and hence the surface-bulk interrelation makes these materials scientifically exciting and perspective. Another proof of this is quite new topic in the field of ferroics, i.e. the huge interest recently in photovoltaic properties of the perovskites and their structural aspects.

**Hot topics to be covered by the symposium:**

- Structural phase transitions and critical phenomena
- Magnetoelectric and multiferroic materials
- Domain boundary engineering
- Interfacial properties, 2D gases
- Thin films, multilayers and heterostructures
- Advances in ab-initio calculations and experimental methods
- Electro/magneto/elasto-caloric effects
- Flexoelectricity
- Piezotronics and photo-piezotronics
- Integration and devices
- Light-induced phenomena
- Defects and disorder in ferroic crystals
- Electronic structure and optical properties
- Ferroelectrics and antiferroelectrics
- Piezoelectrics and lead-free piezoelectrics
- Relaxors and applications
- Recent advances in electron microscopic study of atomic arrangements
- Structural aspects of photovoltaic perovskites

**List of invited speakers:**

- M. Alexe – University of Warwick, Great Britain
- S. Artyukin – Italian Institute of Technology, Genova, Italy
- M. Bibes – Unité Mixte de Physique CNRS/Thales, Palaiseau, France
- R. Burkovskiy – Technical University of St. Petersburg
- A. Bussmann-Holder – Max-Planck Institute, Stuttgart, Germany
- G. Catalan – Institut Català de Nanociència i Nanotecnologia, Spain
- D. Damjanovic – Ecole Polytechnique Fédérale de Lausanne, Switzerland
- O. Dieguez – Tel Aviv University, Israel
- B. Dkhil – Ecole Centrale Paris, France
- J.-H. Ko – Hallym University, Korea
- P. Ghosez – CESAM, Université de Liège, Belgium
- S. Gorfman – Tel Aviv University, Israel
- M. Gregg – Queen's University of Belfast, N. Ireland, UK
- J. Iniguez – Luxembourg Institute of Sciences and Technology, Luxembourg
- J. Junquera – Universidad Autónoma de Madrid, Spain
- J. Kreisel – Institute of Sciences and Technology, Luxembourg
- S. Kamba – Czech Academy of Sciences, Prague, Czech Republic
- T. Lookman – Los Alamos National Laboratory, USA
- M. Maglione – University of Bordeaux, France
- M. Paściak – Czech Academy of Sciences, Prague, Czech Republic
- Ch. Paillard – University of Arkansas, Fayetteville, USA
- B. Prasad – University of California, Berkeley, USA
- E. Salje – University of Cambridge, Great Britain
- W. Schranz – University of Vienna, Austria
- J. F. Scott – University of St Andrews, Great Britain
- K. Szot – Forschungszentrum Jülich, Germany
- P. Thomas – University of Warwick, Great Britain
- S. Vakarshv – St. Petersburg, Russia
- H. Yokota – Chiba University, Japan
- N. Zhang – Xi'an Jiaotong University, China
- Z-G. Ye – Fraser University, Canada

**Symposium Organizers:****Anthony Michael GLAZER**

University of Oxford  
Clarendon Laboratory, Parks Road, Oxford OX1  
3PU, UK  
[michael.glazer@physics.ox.ac.uk](mailto:michael.glazer@physics.ox.ac.uk)

**Krystian ROLEDER**

Institute of Physics, University of Silesia  
ul. Uniwersytecka 4, 40-007 Katowice  
[Krystian.Roleder@us.edu.pl](mailto:Krystian.Roleder@us.edu.pl)

**Jiří HLINKA**

Institute of Physics, Czech Academy of Sciences  
Na Slovance 2, 182 21 Prague 8, Czech Republic  
[hlinka@fzu.cz](mailto:hlinka@fzu.cz)

**Introduction and scope:**

Wide bandgap (WBG) semiconductors (such as SiC and GaN) are currently materials of choice for high power and high frequency electronics. Furthermore, alternative WBG materials (including Ga<sub>2</sub>O<sub>3</sub>, ZnO, and diamond) and heterostructures (including 2D/3D) are gaining more and more interest for advanced applications. The symposium is aimed to discuss current status of WBG technology and new frontiers in this research field.

In the last 20 years, WBG semiconductors, in particular SiC and group III-Nitrides, experienced tremendous improvements in terms of materials quality, and are now employed in a variety of devices for high power/high frequency electronics, optoelectronics and sensing. From the materials side, the 4H-SiC polytype reached the highest quality and large area substrates (up to 150 mm diameter) are nowadays available for industrial applications. On the other hand, the research on cubic polytype (3C) is still in progress, with the aim of improving heteroepitaxy on hexagonal SiC or Silicon substrate. To date, GaN based optoelectronic devices (LED, lasers) and high-electron-mobility transistors (HEMTs) have been almost exclusively developed from heteroepitaxial materials on large diameter foreign substrates (sapphire, SiC, Si), eventually followed by layer transfer process. More recently, high quality bulk GaN and AlN substrates start to be available for research and devices. Notwithstanding these progresses on materials quality, several issues still remain to be addressed to exploit the full potential of SiC and GaN. Among the most relevant issues for SiC power devices are the reduction of interface traps density at SiO<sub>2</sub>/4H-SiC interfaces limiting the carrier mobility MOSFETs, activation of implanted dopants, contacts optimization on n- and p-type doped layers. The development approaches for normally-off HEMTs, gate dielectrics technology and thermal management are critical issues for GaN power devices.

Besides SiC and GaN, alternative WBG materials, such as Ga<sub>2</sub>O<sub>3</sub>, ZnO, and diamond, are currently the object of increasing interest. Furthermore, WBG nanostructures (e.g. nanowires and nanorods) and novel 2D/3D heterojunctions formed by the integration of graphene or other 2D materials with WBG semiconductors are under consideration for novel device applications.

The symposium will serve as a forum for experts from academia and industry to discuss the critical issues in the state-of-the-art SiC and GaN technologies, and wide space will be given to new frontiers in WBG materials and devices.

**Hot topics to be covered by the symposium:**

- SiC homo- and hetero-epitaxy
- SiC device physics (MOS interfaces, contacts, doping by ion implantation, reliability,...)
- III-N homo- and hetero-epitaxy (nucleation layer, interface control,...)
- Bulk GaN growth and device processing
- GaN based HEMTs technology (contacts, dielectrics, approaches to normally off transistors, ...)
- High voltage Schottky diodes on GaN
- III-Nitrides for optoelectronics, photovoltaics and power electronics
- ZnO for electronics and sensing
- Ga<sub>2</sub>O<sub>3</sub> growth and devices processing.
- Thermal management in GaN and oxide devices
- Integration of 2D materials (graphene, TMDs) with group III-Nitrides or SiC
- Wide-bandgap materials for sensors, MEMS and NEMS
- Advanced characterizations (AFM, TEM, optical, electrical,...) of Wide-bandgap materials and heterostructures

**List of invited speakers:**

- Yvon Cordier (CNRS-CRHEA, France)
- Martin Feneberg (OVGU Magdeburg, Germany)
- Ferdinando Iucolano (STMicroelectronics, Italy)
- H.X. Jiang (Texas Tech University, USA)
- Birgit Kallinger (IISB Fraunhofer, Germany)
- Atsushi Nishikawa (ALLOS, Germany)
- Dominique Planson (University of Lyon, France)
- Guylaine Poulin-Vittrant (University of Tours, France)

**Scientific committee members:**

- |  |   |
|--|---|
| • Daniel Alquier (Univ. Tours, France)                 | • Farid Medjdoub (Univ. Lille, France)            |
| • Eldad Baha-Treidel (FBH Berlin, Germany)             | • Adrien Michon (CNRS-CRHEA, France)              |
| • Matteo Bosi (CNR-IMEM, Italy)                        | • Teresa Monteiro (Univ. Aveiro, Portugal)        |
| • Didier Chaussende (CNRS-SIMAP, France)               | • Pawel Prystawko (UNIPRESS, Poland)              |
| • Gabriel Ferro (Univ. Lyon, France)                   | • Fabrizio Roccaforte (CNR-IMM, Italy)            |
| • Filippo Giannazzo (CNR-IMM, Italy)                   | • Sebastiano Ravesi (STMicroelectronics, Italy)   |
| • Philippe Godignon (CNM, Barcelona, Spain)            | • Rositza Yakimova (Linköping University, Sweden) |
| • Peter Gammon (University of Warwick, United Kingdom) | • Konstantinos Zekentes (FORTH, Greece)           |
| • Antonino La Magna (CNR-IMM, Italy)                   | • Marcin Zielinski (NOVASiC, France)              |
| • Mike Leszczynski (UNIPRESS, Poland)                  |   |

**Symposium Organizers:****Giuseppe GRECO**

Consiglio Nazionale delle Ricerche –  
Institute for Microelectronics and  
Microsystems (CNR-IMM)  
Strada VIII, 5, 95121, Catania, Italy  
[giuseppe.greco@imm.cnr.it](mailto:giuseppe.greco@imm.cnr.it)

**Anelia KAKANAKOVA**

Department of Physics, Chemistry  
and Biology (IFM), Linköping  
University  
SE-581 83 Linköping, Sweden  
[anelia@ifm.liu.se](mailto:anelia@ifm.liu.se)

**Bela PECZ**

Institute for Technical Physics and  
Materials Science,  
Centre for Energy Research,  
Hungarian Academy of Sciences  
1121 Budapest, Konkoly Thege 29-33  
Hungary  
[pecz.bela@energia.mta.hu](mailto:pecz.bela@energia.mta.hu)

**Piotr KRUSZEWSKI**

Institute of High Pressure Physics  
(UNIPRESS)  
Polish Academy of Sciences  
Sokolowska 29/37, 01-142 Warsaw  
Poland  
[kruszew@unipress.waw.pl](mailto:kruszew@unipress.waw.pl)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

Following the successful edition of last year, the symposium will give again the opportunity to discuss about the latest research efforts and developments related to spin-dependent phenomena in semiconductors including 2D materials and their heterostructures as well as topological insulators. The main goal is to address many different research fields related to spintronics ranging from the study of spin dynamics in conventional semiconductors for quantum engineering and spintronic purposes to the development of new materials where strong spin-orbit interaction translates into newly emerging topics such as valleytronics and spin-momentum locking leading to complex spin textures.

Nowadays, the electron spin offers new opportunities as a new degree of freedom to process information by combining non-volatility and high-speed manipulation within a scalable solid-state framework. Ferromagnetic metals have already been integrated into microelectronic and spintronic devices such as magnetic field sensors or magnetic random access memories (MRAM). Semiconductors have also attracted great attention for their very specific and promising spin properties: very long spin coherence times allowing to envision the implementation of quantum spin manipulation with mature microelectronics technology, and long spin diffusion lengths for spin transport and manipulation in spintronic devices. Moreover, electrical control of the spin degree of freedom could enable the integration of logic and memory functions, thus mitigating power consumption and boosting the performances of next generation spin-based devices. Control of single spins and of the interactions between them is one of the preferred routes towards the realization of a scalable quantum computer in a solid-state system or spin-based electronic devices like spin-transistors. With this respect, a central goal of semiconductor spintronics is to understand and control the fundamental mechanisms governing coherent phenomena and spin transport. Eventually the ability to address and read optically the spin states is a key advantage of semiconductors, it will definitely lead to novel concepts for devices and electronic circuits.

Recently, a new frontier of exploration in the field of spintronics is offered by topologically protected surface and edge states in bulk and quantum wells of narrow-gap semiconductors and semimetals, respectively. The strong spin-momentum locking into edge or surface states of topological insulators might lead to dissipationless electrical transport and large current-induced surface spin accumulations enabling to switch the magnetic state of MRAMs by spin-orbit torques. Similarly, atomically-thin transition metal dichalcogenides introduce the new valley degree of freedom giving birth to a new field of research called valleytronics. This new topic will raise novel and intriguing phenomena such as the valley Hall effect, a consequence of the Berry curvature. Furthermore, due to their low-dimensional character, proximity effects are effective tools to tailor their electronic properties such as exchange coupling to control valley polarization.

The symposium will thus provide the opportunity to gather insights into theoretical and experimental advances in spin-dependent phenomena and will cover progress in the development of spintronic materials, with a special focus on semiconductors, 2D and topological materials. The aim is to foster a discussion about emerging systems and stimulate future research directions heading to the horizon of solutions and know-how having immediate repercussions on societal concerns ranging from security to energy saving.

**Hot topics to be covered by the symposium:**Spin-dependent phenomena in Semiconductors:

- Spin injection and detection
- Spin Confinement effects
- Spin-dependent transport in 2D electron and hole gases
- Spin helix states
- Charge-spin interconversion by spin-orbit coupling effects
- Spin-optoelectronics

Topological insulators:

- New 3D and 2D topological insulators
- Electron spectroscopies of topological insulators
- Quantum spin Hall effect
- Weyl and Majorana fermions
- Spin-orbitronics
- Topological quantum computing

Two dimensional materials:

- Growth of atomically thin semiconductors and their heterostructures
- Ferromagnetic contact engineering
- Spin transport
- Van der Waals heterojunctions and proximity effects
- Spin dynamics and scattering processes
- Valleytronics

**Scientific committee members:**

- |   |  |
|---|--|
| • A. Balocchi, INSA Toulouse (France)                     | • G. Isella, Politecnico di Milano (Italy)   |
| • J. Cibert, Institut NÉEL (France)                       | • M. Kohda, Tohoku University (Japan)        |
| • H. Dery, University of Rochester (US)                   | • G. Salis, IBM (Switzerland)                |
| • T. Dietl, International Research Centre MagTop (Poland) | • D. Weiss, Universität Regensburg (Germany) |
| • J. Fabian, (Univ Regensburg)                            | • L. Yang, University of Toronto (Canada)    |
| • W. Han, Beijing University (China)                      | • H. Jaffrès, UMPy CNRS-THALES (France)      |

**Symposium Organizers:****Mathieu JAMET**

INAC/Spintec and University  
Grenoble Alpes  
17 rue des Martyrs, 38054 Grenoble  
cedex 9, France  
[mathieu.jamet@cea.fr](mailto:mathieu.jamet@cea.fr)

**Fabio PEZZOLI**

Università di Milano-Bicocca  
via R. Cozzi 55, 20125 Milano, Italy  
[fabio.pezzoli@unimib.it](mailto:fabio.pezzoli@unimib.it)

**Aurelie SPIESSER**

National Institute of Advanced  
Industrial Science and Technology  
1-1-1 Umezono, Tsukuba, Ibaraki,  
305-8568 Japan  
[aurelie.spiesser@aist.go.jp](mailto:aurelie.spiesser@aist.go.jp)

**Piotr KOSSACKI**

Faculty of Physics, University of  
Warsaw  
ul. Pasteura 5, Warsaw 02-093,  
Poland  
[Piotr.Kossacki@fuw.edu.pl](mailto:Piotr.Kossacki@fuw.edu.pl)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

**Introduction and scope:**

The symposium aims to gather scientists working on monolithic and heterogeneous integration to expand silicon technology. It is an evolution of a series of symposia that attracted a large number of attendees over the years. This research field paves the way towards highly functionalized Si-based technologies that can address challenges in our societies.

The microelectronics industry has delivered faster and efficient computing devices at a remarkably consistent pace for several decades now. This achievement is mainly due to the classic silicon MOS transistor, which allowed the device scaling down, while improving speed and energy consumption. These benefits led to the rise of high performance and affordable computers, to mobile & low power devices. More recently, the performance demand is pulled by new markets driven by societal needs like the Internet-of-things, ultra-fast data communication, cognitive systems, application in life-sciences and new computing paradigms. However, transistors cannot scale down indefinitely.

The microelectronics industry is therefore looking beyond the classic silicon transistor to secure the future of a new generation of devices. But the best candidates are likely to be those that can be integrated with conventional silicon chip technology. The integration of new materials, like alternative semiconductors or oxides, with conventional silicon electronics will open up a wide range of applications, from ubiquitous low-power devices to photonic based interconnects and quantum information processors. The symposium aims to highlight novel and innovative approaches that allow monolithic and heterogeneous integration on silicon baseline technology, either for CMOS applications (e.g. steep slope switches) or integrated photonics (e.g. monolithic lasers and silicon-organic hybrid modulators on a Si platform). The scope includes fundamental materials understanding, using novel integration schemes and/or state-of-the-art modelling, or targeting new fields of application. The focus will be on the fabrication, characterization, and simulation (semi-empirical or ab-initio) of materials considered as non-standard for Si technology, such as strained SiGe, (Si)GeSn(C) etc.; compound semiconductors (III-V, II-VI); oxides, nitrides; and two-dimensional materials (graphene, BN, MX2). Contributions related to innovative hetero-integration techniques (advanced heteroepitaxy, layer transfer, wafer bonding, microstructure printing, self-assembly etc.) will be encouraged. Finally, a particular attention will be given to devices and applications demanding an interdisciplinary approach such as RF applications, biomedical or environmental sensing concepts realized on a semiconductor platform (THz sensing and SERS with semiconductor plasmonics), and to materials innovations that aim at addressing new computing paradigms such as quantum and neuromorphic computation.

The productive interaction across disciplines will help materials scientists to drive the exciting transition towards higher-value, highly functionalized Si-based microelectronics, supporting technology that can address today's and tomorrow's societal needs.

**Hot topics to be covered by the symposium:**Materials science, characterization and simulation:

- Group IV and compound semiconductors (Ge, II-VI, III-V...)
- Oxides and nitrides (perovskites, ZnO, piezoelectric...)
- Semiconductors on insulators (SOI, GOI...)
- 2 dimensional materials (Graphene, Chalcogenides ...)
- Structural and electronic modeling

Integration Techniques:

- Advanced heteroepitaxy (Selective growth, ELO, self-assembly...)
- Layer Transfer (Wafer bonding, layer release, printing...)
- 3D integration (Monolithic, Die 2 Wafer, TSV, 2.5D interposers...)

Applications:

- Data processing and communication (Quantum computing, Advanced CMOS scaling; high-power & RF frequency devices; ultra low power electronic; new transistor geometries, Integrated photonics; IR and THz lasers; CMOS-Si electro-optical integration)
- Life-Sciences application and environmental sensors
- Advanced TCAD methods, nanoelectronic device simulation

**List of invited speakers:**

- R. Calarco (PDI Berlin, Germany) « Epitaxial growth of van der Waals bonded halogenides-based superlattices »
- M. Brehm (JKU Linz, Austria) « On site controlled and advanced Ge/Si quantum dots »
- H. Liu (U.C.London, UK) « Monolithically Integrated III-V Quantum Dot Light Sources on Silicon »
- T. Ernst (CEA/LETI, France) « Heterogeneous integration for novel generations of integrated systems »
- S. Christiansen (MPI Erlangen, Germany) « 3D nano-architectures on Si platforms »
- Monica De Seta (Roma Tre) « Towards a THz quantum cascade laser based on silicon heterostructures »
- V. Kaganer (PDI Berlin, Germany) « In-depth characterization of defects in heteroepitaxial semiconductors by X-ray »
- N. Cousineau (INP/CNRS, France) « CMOS circuits and monolithic integration for power semiconductor devices »
- B. Vincent (Coventor/LAM) « Advanced Semiconductors Processing using Virtual fabrication »
- G. Isella (Politecnico di Milano) « Ge and SiGe heterostructures for near- and mid-IR integrated photonics »

**List of scientific committee members:**

- J.-P. Raskin (UC de Louvain, Belgium)
- A. Spiesser (AIST, Japan)
- M. Zöllner (IHP, Germany)
- S. Ballandras (Frequensys, France)
- M. Myronov (U Warwick, UK)
- J.-N. Aqua (Institut des NanoSciences de Paris, France)
- G. Katsaros (Institute of Science and Technology Austria)
- E. Tournie (CNRS/Univ. Montpellier, France)
- M. Houssa (KUL, Belgium)
- M. Camarda (CNR Catania, Italy)

**Symposium Organizers:****Didier LANDRU**

SOITEC  
Parc Technologique des Fontaines -  
Chemin des Franques F38190 Bernin,  
France  
[didier.landru@soitec.com](mailto:didier.landru@soitec.com)

**Inga Anita FISCHER**

Institut für Halbleitertechnik,  
Universität Stuttgart (Institute for  
Semiconductor)  
Pfaffenwaldring 47, 70569  
Stuttgart, Germany  
[fischer@iht.uni-stuttgart.de](mailto:fischer@iht.uni-stuttgart.de)

**Clement MERCKLING**

imec  
Kapeldreef 75, 3001 Leuven,  
Belgium  
[clement.merckling@imec.be](mailto:clement.merckling@imec.be)

**Francesco MONTALENTI**

University of Milano-Bicocca  
Dipartimento di Scienza dei Materiali,  
Via R. Cozzi 55, 20125 Milan, Italy  
[francesco.montalenti@unimib.it](mailto:francesco.montalenti@unimib.it)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)



**Introduction and scope:**

The relation between electronic structure and the crystallographic atomic arrangement is one of the fundamental questions in condensed matter physics and inorganic chemistry. Since the discovery of the atomic nature of matter and its periodic structure, this has remained as one of the main questions regarding the very foundation of solid systems. Needless to say this has also bearings on physical and chemical properties of matter, where again the relation between structure and performance is of direct interest. Discoveries of novel properties and quantum states at high pressure may lead to new categories of material science frontiers.

High-pressure science is a fast developing new field in condensed matter physics and may even be regarded as the exploration of an entirely new dimension. This is to a large portion of course due to the development of the diamond anvil cell (DAC) technique with which one can easily control the pressure for systems of interest in the range of several mega bars and due to increasingly sophisticated synchrotron facilities to observe some of the drastic changes effected in the physical properties. With pressure, we can tune electronic, magnetic, structural and vibrational properties of condensed matter for a wide range of applications. Pressure has long been recognized as a fundamental thermodynamic variable, but whose use was previously limited by the available pressure vessels and probes. The development of megabar diamond-anvil cells (DACs) and associated in-laboratory and synchrotron techniques have opened a vast new window for exploiting the pressure variable in energy research. With the addition of the pressure dimension, can anticipate a marked increase in the number of materials and phenomena to be discovered than all that have been explored at ambient pressure. Pressure drastically and categorically alters all phonon, electronic, magnetic, structural and chemical properties, and pushes materials across conventional barriers between insulators and superconductors, amorphous and crystalline solids, ionic and covalent compounds, and vigorously reactive and inert compounds. In the vast pressure dimension, the discovery of surprising high-pressure physical and chemical phenomena and the creation of novel materials become the rule rather than the exception. Exciting examples of pressure-induced phenomena include intermetallic compound-alloy transitions due to 4f electron delocalization, magnetic collapse in 3d transition elements, complication of "simple electron gas" metals, creation of record high-T<sub>c</sub> superconductors, the fascinating polymorphism of simple molecular solids, and the discovery of compounds ultra-rich in hydrogen content. Many of these may have important energy implications limited only by imagination. The most promising is that an increasing number of novel materials with unique properties discovered at high pressures can be stabilized at low pressure; some of these can even be recreated through alternative chemical paths. Fundamental knowledge gained in high- pressure scientific exploration is also invaluable for energy considerations. This proposed symposium at EMRS 2016 Fall meeting would lead to an improved understanding and performance of materials at ambient and extreme conditions.

**Hot topics to be covered by the symposium:**

- Topological Insulators
- Hard Materials ( Carbon based materials)
- Hydrogen densed materials
- Phase Change materials
- Functional Oxides
- Dilute magnetic semiconductors
- Data Driven discovery

**Symposium Organizers:****Wei LUO**

Uppsala University  
Department of Physics & Astronomy  
Box, 516, 75120, Uppsala, Sweden  
[wei.luo@physics.uu.se](mailto:wei.luo@physics.uu.se)

**Yang DING**

Center for High Pressure Science & Technology  
Advanced Research (HPSTAR)  
1690 Cailun Rd., Shanghai, 201203, China  
[yang.ding@hpstar.ac.cn](mailto:yang.ding@hpstar.ac.cn)

**Hongting SHI**

Beijing Institute of Technology (USTB)  
No. 5 Zhongguancun South Str. 100081 Beijing,  
China  
[Eshihongting@126.com](mailto:Eshihongting@126.com)

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

## General Information

Full information about the scientific programme, abstract submission, registration and accommodation can be found through the link to

[www.european-mrs.com](http://www.european-mrs.com)

For general information about the conference contact the E-MRS Fall Meeting Conference Secretary

### CONFERENCE SECRETARIAT

Faculty of Materials Science and Engineering  
Warsaw University of Technology  
Wolowska 141  
02-507 Warsaw, Poland  
Phone: +48 22 234 87 94  
Fax: +48 22 234 85 14  
Email: [emrs@pw.edu.pl](mailto:emrs@pw.edu.pl)

All information regarding a specific symposium can be obtained by making direct contact with the symposium organisers. The email addresses will be found at the end of the description of each symposium given in this announcement.

### LANGUAGE

The conference language is English.

### CONFERENCE VENUE



**Central Campus of  
Warsaw University of  
Technology**  
Pl. Politechniki 1,  
00-661 Warsaw, Poland

Many places of interest are within easy walking distance of the University. The area around the campus has a 'student town' atmosphere with many student pubs, which are excellent places to meet and share experiences after the symposia.

Good public transport connections to the university, by metro, tramway, or by bus are available from anywhere in Warsaw. The Central Campus is located just 10 minutes from the city centre and 20-30 minutes from the Old Town.

### REGISTRATION

All participants (including chairpersons, authors, presenting authors, invited speakers, scientific committee members...) must register. Online registration and payment is recommended to avoid long queues. PLEASE NOTE: Registration for the conference and abstract submission are separate items and are not linked.

To be eligible for the early registration fee online registration must be made by 5 p.m. (EST) on August 10th, 2018.

On-line registration is open until 3rd September, 2018.

On-site registration will be open on Sunday, September 16th, 2018, from 14:00 to 18:00 and during the conference from 08:00-18:00

#### On-site payment hours:

Sunday, September 16 <sup>th</sup> , 2018	14:00 - 18:00
Monday, September 17 <sup>th</sup> , 2018	08:00 - 18:00
Tuesday, September 18 <sup>th</sup> , 2018	08:00 - 18:00
Wednesday, September 19 <sup>th</sup> , 2018	08:00 - 18:00
Thursday, September 20 <sup>th</sup> , 2018	08:00 - 18:00

### REGISTRATION FEES

#### FULL RATE

Early registration fee (before August 10<sup>th</sup>, 2018): 450 EUR

Late (after August 10<sup>th</sup>, 2018) and on-site registration fee: 500 EUR

#### STUDENT RATE

Early registration fee (before August 10<sup>th</sup>, 2018): 280 EUR

Late (after August 10<sup>th</sup>, 2018) and on-site registration fee: 330 EUR

Deadline for abstract submission: **21<sup>st</sup> May, 2018**

[www.european-mrs.com](http://www.european-mrs.com)

## General Information

The registration fee for a Regular Participant includes:

1. Admission to the Plenary Session, all parallel symposia and workshops
2. Programme and Book of Abstracts
3. Conference Badge
4. Refreshments during breaks
5. Lunches
6. Evening reception on Wednesday, September 19<sup>th</sup>, 2018
7. Admission to the poster sessions
8. One copy of the proceedings of a specific symposium

The following payment options are offered:

- Credit card (Carte Bleue, Visa, Eurocard/Mastercard)
  - Cheque (to the order of E-MRS)
  - Bank transfer (please see. BANK INFORMATION section)
- NB: A Purchase Order from a company is also acceptable.

### IMPORTANT DEADLINES

- May 21<sup>st</sup>, 2018: Deadline for abstract submission.
- June 30<sup>th</sup>, 2018: Notification of acceptance and mode of presentation.
- August 10<sup>th</sup>, 2018: Last day for early registration at the reduced fee.
- after August 10<sup>th</sup>, 2018: Late registration fees apply.

Please note that the early registration fee is applicable only for a participant who registers and submits payment by 10<sup>th</sup> August, 2018.

### PROCEEDINGS

The submitted manuscripts being considered for publication will be subjected to a peer review procedure. The decisions on the deadline and procedure for submitting manuscripts are made by the SYMPOSIUM ORGANISERS. The authors of papers accepted for presentation at the conference should ensure that they have the appropriate instructions for preparing the manuscript.

### CONFERENCE SCIENTIFIC PROGRAMME

The complete scientific program will be available on the website from mid July 2018.

### ABSTRACT SUBMISSION

**Abstract length:** Website submissions are limited to 1500 characters. (plain text only, no figures, no formulae...)

Note: All abstracts must be submitted through the E-MRS website at [www.european-mrs.com](http://www.european-mrs.com)

Submitting abstracts through the website is very easy. Follow the step-by-step instructions on the template, making sure that the complete mailing address is included for the presenting and corresponding authors. After submitting the abstract, please use the given Control ID number in all communications with E-MRS regarding the abstract UNTIL a paper number (e.g., A 8) has been assigned. After that date, any change must be submitted to: [emrs@inmat.pw.edu.pl](mailto:emrs@inmat.pw.edu.pl) with the Subject: Abstract Revision and the email must include your Paper number. Please state exactly where the text revisions are located (e.g., title, author, body, etc)

### POSTER PRESENTATIONS

Poster sessions will be held on 17<sup>th</sup> and 18<sup>th</sup> of September. The authors presenting posters are required to be present at the appropriate session to discuss or defend the paper.

The maximum poster size is A0 (841 × 1189 mm);

No tapes or pins will be needed for hanging posters;

The posters must be removed immediately after the session and the Conference Organisers accept no responsibility for posters left up after this time.

Conference participants may preview the posters during the morning and afternoon sessions, before the formal poster sessions.

### ORAL PRESENTATIONS

Duration of oral presentations, including discussion, depends on the Symposium Organisers but the strong recommendations are:

- 45 minutes for plenary talks,
- 30 minutes for invited talks,
- 15 minutes for contributed talks.

Close adherence to these times will enable participants to move seamlessly from one symposium to another

### EXHIBITION

The industrial exhibition will be held from September 17<sup>th</sup> – 19<sup>th</sup>, 2018 in the historic Main Hall of Warsaw University of Technology, close to the symposium rooms. The Main Hall is also the venue for all refreshment breaks between the scheduled sessions to facilitate the maximum contact between exhibitors and participants.

The Exhibition at the 2018 E-MRS Fall Meeting will provide an excellent opportunity for participants to become acquainted with some of the latest equipment and services relevant for materials science research and to obtain information, costs and availability.

## General Information

### GETTING TO WARSAW



#### By plane

##### Warsaw Chopin Airport

Departures and Arrivals Information, phone + +48 22 650 4220

On-line timetable [www.lotnisko-chopina.pl](http://www.lotnisko-chopina.pl)

Warsaw's Chopin Airport is located some 12 km from the city centre, which can be easily reached by car, public bus or taxi. <https://www.lotnisko-chopina.pl/en/access.html>

##### Warsaw Modlin Airport

Airport Information, phone +48 22 315 18 80

Airport webpage: <http://www.modlinaairport.pl/>

Train: By Modlin shuttle-bus to Modlin train station, then by train (KM) to Central Railway Station. (4-5 €)

Bus: Modlin-bus connects Modlin Airport and Central Railway Station



#### Taxis

For arrivals at Chopin airport use the official taxi rank as the airport is served only by 3 Radio-Taxi companies: Ele Taxi, Sawa Taxi and Super Taxi and the fare to the city centre should not exceed 40PLN. When using taxis in Warsaw, it is strongly recommended that you use only those showing: the symbol of Warsaw – a mermaid – on both front doors, yellow/red stripes affixed to the glass along the front doors, a number on the side of the vehicle, a hologram with the licence number and the vehicle's registration number on the upper right-hand corner of the front glass and a sticker with price information per kilometer displayed on the glass of the right-hand side back door. It is recommended that you use one of the city's official Radio-Taxi companies shown above, and order a taxi by telephone or through your hotel.



#### By train

There are three train stations in Warsaw that handle international and domestic traffic:

- Warszawa Centralna (Central Warsaw) (Aleje Jerozolimskie 54) - situated in the city centre with very good connections to all parts of the city.
- Warszawa Zachodnia (West Warsaw) (Aleje Jerozolimskie 144) – adjacent to the international bus terminal where those travelling in or out of the country make their transfers.
- Warszawa Wschodnia (East Warsaw) (Lubelska 1) - located on the east side of Vistula River (Praga)

Railway tickets can be purchased using cash or credit cards at the windows (kasa) in the stations, on the Internet or at selected travel agencies. You can also purchase your ticket on the train from the conductor, immediately after boarding the train. This is not applicable for travel on the Intercity Pendolino services as prior reservation is mandatory. Tickets sold on the train are subject to an additional fee.

The train Timetable is available at: [www.pkp.pl](http://www.pkp.pl) or [www.intercity.pl](http://www.intercity.pl)



#### By car

The main way to access to Warsaw by road is by one of the four major European routes:

- from the north: Route E77 (from Gdańsk)
- from the east: Route E67 (from Białystok), route E30 (from Terespol)
- from the south: Route E67 (from Wrocław), route E77 (from Kraków)
- from the west: Route E30 (from Poznań)

On all roads there are signs showing the distance in kilometers to the centre of Warsaw.



#### Parking

There is no free parking around the Conference Venue.

The whole area of Warsaw city centre is a controlled parking zone. This rule applies from Monday to Friday, from 8 am to 6 pm. On Saturdays, Sundays and public holidays parking is free.

Warsaw Car parks system "Park & ride":

<http://www.ztm.waw.pl/parkujijedz.php?c=116&l=2>

Useful links:

<http://www.ztm.waw.pl/>

<http://warsawtour.pl/en>



#### LOCAL PUBLIC TRANSPORT

The WUT Central Campus can be easily reached using public transport. The tram stop "Plac Politechniki" for lines 10, 14 and 15 is immediately outside the university and the Metro station "Politechnika" is a 10 min. walk from the venue.

From the city centre's main railway station "Warszawa Centralna" it is about a 20 min. walk, or 3 min. by tram No. 10, to the conference venue. Tram 10 departures from the stop "Dworzec Centralny" in the direction "Wyscigi" and "Służewiec" every 10-15 minutes. There are three stops to the "Plac Politechniki" tram stop.

The local trains (SKM - Fast Urban Railway, and KM - Masovian Railways), buses, trams and metro require a valid ticket – the one-way price is 1-2 € and can be bought in any kiosk, in ticket machines at most bus stops or inside trains and buses) or from the bus or tram driver.



## General Information

### ACCOMMODATION

Nobell Congressing, as the OFFICIAL HOTEL PROVIDER FOR E-MRS 2018 FALL MEETING, is pleased to offer you various standards of accommodation at discounted rates. We offer hotel accommodation in hotels located a few steps from a conference venue – in walking distance. You may choose from a range of hotel standards to suite all budgets. All prices are discounted specifically for participants at the E-MRS 2018 Fall Meeting s. Book your hotel at <https://emrs.nobell.pl/hotels>.

#### Booking team

Nobell Congressing  
Norbert Karczmarczyk  
phone: +48 22 621 67 37  
email: [norbert@nobell.pl](mailto:norbert@nobell.pl)

Please note that hotel booking and conference registration are totally separate systems and are not linked in any way.

### SOCIAL EVENT

All participants are invited to attend the Conference Reception on Wednesday September 19<sup>th</sup>, 2018 starting at 18:00. Musical entertainment and refreshments will be provided as part of conference arrangements. Symposium organizers and Best Presentation Award Winners will be honoured at the commencement of the reception.

### GRADUATE STUDENT AWARD

E-MRS announces the availability of awards (up to 2 per symposium) for graduate students conducting research on a topic to be addressed in a symposium held during the E-MRS 2018 Fall Meeting.

Each award will consist of a grant of 350 EUR which will be presented with a diploma

Criteria for selection are:

- Participation at the E-MRS 2018 Fall Meeting as an attendee and author or co-author of a symposium paper
- Outstanding performance in the conduct of this project and promise for future substantial achievement in materials research as judged by the faculty advisor
- Significant and timely research results

Application materials required:

- Application form duly completed
- Abstract of paper to be presented at the meeting
- Letter of support from research supervisor

Submit the complete application form by email [emrs@pw.edu.pl](mailto:emrs@pw.edu.pl) to the E-MRS Secretariat by July 16, 2018 at the latest.

Winners will be notified on-site directly by the concerned symposium organizer.

E-MRS Graduate Student Award winners must be present during the ceremony on Wednesday evening, 19<sup>th</sup> September, to get their prizes.

### AUDIOVISUAL EQUIPMENT

For the oral presentations - the following equipment will be available:

- laptops with XP or Windows 7 and Microsoft Office Power Point. It is preferable that presentations are on CD or USB flash memory stick, if an author requires something else please contact the organisers
- digital projector
- laser pointers and microphones if necessary

### INTERNET ACCESS / WIFI

The Computer Lab will be open from 8:00 to 18:00 for all participants during the conference. In addition wireless access to the internet will be provided for all conference participants possessing their own laptops.

### PASSPORTS AND VISAS

All foreign visitors must possess a passport valid for at least 6 months following the conference. Some participants may require visas in order to enter Poland. Please check with your local Polish Consulate or Embassy for details regarding visa and entry requirements. Poland is part of the Schengen area so that participants travelling within the Schengen area are not required to show passports when entering or leaving Poland, although airlines frequently require a photo ID.

### LETTERS OF INVITATION

The Scientific Secretariat will, on request, send a personal invitation to participate. This invitation is only to assist potential participants to raise funds or to obtain a visa, and is not a commitment on the part of the organisers to provide any financial support.

### LIABILITY

The E-MRS and Local Organizers of the 2018 Fall Meeting cannot accept liability for any personal accidents, loss of belongings or damage to the private property of participants, either during, or directly arising from, the E-MRS 2018 Fall Meeting. Participants are requested to make their own arrangements with respect to health, travel and property insurance before leaving for the conference. Participants who are citizens of a European Union member state may obtain a European Health Insurance Card which gives some entitlement to medical treatment whilst in Poland.





E-MRS  
BP 20  
67037 Strasbourg Cedex 2  
France

**Motif de non distribution / not deliverable for doe following reason :**

- ☐ Adresse insuffisante / Insufficient address
- ☐ Inconnu / Unknown
- ☐ Refusé / Refused
- ☐ Parti sans laisser d'adresse / Moved without leaving address
- ☐ Auture / Other