



European Materials Research Society

# Spring Meeting 2022

May 30 | June 3  
Virtual Conference

## SYMPOSIUM H

2D materials for energy storage:  
batteries, super capacitor, solar cells, thermoelectric

Symposium Organizers :

Manickam MINAKSHI, Murdoch University

Priya VASHISHTA, University of Southern California

Rajeev AHUJA (Main Organizer), Department of Physics and Astronomy,  
Uppsala University

**JPhys Energy**

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Monday may 30		12:15	LUNCH
08:45	<b>WELCOME AND INTRODUCTION TO THE SYMPOSIUM</b>		
	<b>-I : RAJEEV AHUJA</b>		<b>-II : RAJEEV AHUJA</b>
09:00	<b>Large-Scale Thermal Property Simulations of 2D Materials using Machine Learning Force Fields</b> Natarajan, S. K. (1), Luy, J.-N. (1), Schneider, J. (1), Arcisauskaitė, V. (1) & Martinez, U.* (1). (1) Synopsys QuantumATK, Fruebjergvej 3, 2100 Copenhagen, Denmark * lead presenter	H 1.1	13:45 <b>Graphene-covered substrates for the growth of releasable GaAs thin films: towards substrate reuse in III-V photovoltaics</b> Carlos Macías 1,2, Antonella Cavanna 2, Ali Madouri 2, Laurent Travers 2, Jean-Christophe Harmand 2, Stéphane Collin 1,2, Andrea Cattoni 1,2, Amaury Delamarre 1,2. 1 Institut Photovoltaïque d'Île-de-France (IPVF), 18 Bd Thomas Gobert, 91120 Palaiseau, France. 2 Centre de Nanosciences et de Nanotechnologies (C2N), CNRS, Université Paris-Saclay, 10 Bd Thomas Gobert, 91120 Palaiseau, France.
09:15	<b>Polycrystalline silicon substrate thickness effect on solar cells performances</b> Mohamed BEN RABHA LaNSER, CRTE	H 1.2	14:00 <b>Electrochemistry of single layer MXene pseudocapacitance at nanoscale</b> Marc Brunet Cabre (1), Dahnan Spurling (2), Pietro Martinuz (3), Valeria Nicolosi (2), Paula E. Colavita (1), Kim McKelvey (1)(4) (1) School of Chemistry, Trinity College Dublin, Dublin 2, Ireland., (2) School of Physics, Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN) and Advanced Materials and Bioengineering Research (AMBER), Trinity College Dublin, Dublin, Ireland, (3) Dipartimento di Chimica, Università degli Studi di Milano, Milan, Italy, 4 MacDiarmid Institute for Advanced Materials and Nanotechnology, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington 6012, New Zealand.
09:30	<b>Emergence of metallic states at 2D MoSSe/GaAs Janus interface</b> Arwa Albar 1, S Assa Aravindh 2* 1 Physics Department, Faculty of Science, University of Jeddah, PO Box 80327, Jeddah 21589, Saudi Arabia 2 Nano and Molecular Systems Research Unit, University of Oulu, Pentti Kaiteran katu 1, Oulu 90570, Finland	H 1.3	14:15 <b>Major Energy Storage Enhancement in Workfunction Engineered ZrO2 Supercapacitors</b> Patrick D. Lomenzo, Thomas Mikolajick, Uwe Schroeder Patrick D. Lomenzo Nanoelectronic Materials Laboratory (NaMLab) gGmbH, 01187 Dresden, Germany, Thomas Mikolajick Nanoelectronic Materials Laboratory (NaMLab) gGmbH, 01187 Dresden, Germany Chair of Nanoelectronic Materials, TU Dresden, 01187 Dresden, Germany, Uwe Schroeder Nanoelectronic Materials Laboratory (NaMLab) gGmbH, 01187 Dresden, Germany,
09:45	<b>Li-ion diffusion on the surface of Ti3C2-T (T = O, S, Se, F, Cl, Br) MXene</b> Konstantina A. Papadopoulou(1), David Parfitt(1), Alexander Chronos(2,3), and Stavros-Richard G. Christopoulos(1) (1)Faculty of Engineering, Environment and Computing, Coventry University, Priory Street, Coventry CV1 5FB, United Kingdom (2)Department of Materials, Imperial College London, London SW7 2BP, United Kingdom (3)Department of Electrical and Computer Engineering, University of Thessaly, 38221 Volos, Greece	H 1.4	14:30 <b>Room temperature magnetic anisotropy of CrSBr two-dimensional ferromagnetic semiconductor investigated by electron spin resonant</b> Fabrizio Moro, Xue Liu, Andrés Granados del Águila and Marco Fanciulli Fabrizio Moro and Marco Fanciulli Department of Materials Science, University of Milano-Bicocca, Milano 20125, Italy, Xue Liu Information Materials and Intelligent Sensing Laboratory of Anhui Province, Institutes of Physical Science and Information Technology, Anhui University, Hefei 230601, China, Andrés Granados del Águila Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore.
10:00	<b>Identifying the best suitable medium for long duration storage of Ti2CTx MXene</b> Chiranjit Roy, Somnath Bhattacharyya Department of Metallurgical and Materials Engineering, Indian Institute of Technology Madras, Chennai 600036	H 1.5	14:45 <b>SYNTHESIS AND CHARACTERIZATION OF 2D LAYERD PHOSPHONIUM BASED LEAD HALIDE PEROVSKITE MATERIAL</b> Subrat Rout, Prabhanshan Pradhan and Biplab K. Patra*(corresponding author) Email-subrat.r@immt.res.in Email-bkpatra@immt.res.in (corresponding author) Materials Chemistry Department, CSIR-Institute of Minerals and Materials Technology, Bhubaneswar, 751013, India
10:15	<b>Formation photocatalytic O-doped carbon nitride nanosheets on anatase nanopowdered matrix as hydrogen energy material</b> M. Bondarenko, P. Silenko, Yu. Solonin, A. Ragulya, N. Gubareni, M. Zahornyi, O. Khyzhun, N. Yarova Frantsevich Institute for Problems of Materials Science of NASU, Krzhyzhanovskiy St. 3, 03142 Kiev, Ukraine	H 1.6	15:00 <b>Low-cost and high throughput synthesis of ZnO nanostars for Energy Storage applications.</b> G. Di Mari (1,2), G. Mineo (1,2), G. Malandrino (3), G. Franzò (2), S. Mirabella (1,2), E. Bruno (1,2) (1) Dipartimento di Fisica e Astronomia "E. Majorana", Università degli Studi di Catania, Via S. Sofia 64, I-95123, Catania, Italy, (2) CNR-IMM, Via S. Sofia 64, I-95123, Catania, Italy, (3) Dipartimento di Scienze Chimiche, Università degli Studi di Catania, INSTM UdR Catania, Viale A. Doria 6, I-95125, Catania, Italy
10:30	<b>DISCUSSION</b>		
10:45			
11:00	<b>Organic molecules meets transition metal dichalcogenides for solar energy conversion</b> Juliana M. Morbec School of Chemical and Physical Sciences, Keele University, UK	H 1.7	15:15 <b>Investigation of macro and nano-sized NASICON Mg0.5Ti2(PO4)3 as potential electrode materials for Mg-ion batteries</b> Martina Romio, Yuri Surace, Damian M. Cupid Battery Technologies, Center for Low-emission transport, AIT Austrian Institute of Technology GmbH Giefinggasse 4, 1210 Vienna, Austria
11:15	<b>A potential approach to grow van der Waals heterostructures based on pulsed laser deposition of solid oxide precursors for thin</b> Denys I. Miakota1, Ganesh Ghimire1, Rajesh Ulaganathan1, Raymond R. Unocic2, Sara Engberg1, Fabian Bertoldo3, David Geohagan2, Kristian S. Thygesen3, and Stela Canulescu1 1 Department of Photonics Engineering, Technical University of Denmark, DK-4000 Roskilde, Denmark 2 Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831, United States, 3 CAMD and Center for Nanostructured Graphene (CNG), Department of Physics, Technical University of Denmark, 2800 Kgs. Lyngby, Denmark	H 1.8	15:30 <b>Ultrathin printable transistors from an optimized dielectrics inks</b> Chengning Yao, Benji Fenech Salerno, Callon Peate, Felice Torrisi Department of Chemistry-Molecular Sciences Research Hub-Imperial College London, Department of Chemistry-Molecular Sciences Research Hub-Imperial College London, Department of Chemistry-Molecular Sciences Research Hub-Imperial College London, Department of Chemistry-Molecular Sciences Research Hub-Imperial College London,
11:30	<b>Time Dependent Exfoliation of Bulk MoS2 for Electrochemical Studies - Ranging from Supercapacitors to Na ion Batteries</b> Surbhi Priya, Debabrata Mandal, Trilok Singh, Amreesh Chandra Research Scholar, Research Scholar, Professor, Professor	H 1.9	15:45 <b>Optical anomalies in Large-Area MoS2 nanoripples boost Photobleaching of Dye Molecules</b> Gardella, M.*(1), Ferrando, G. (1), Barelli, M. (1), Chowdhury, D. (1), Giordano, M.C. (1), Buatier de Mongeot, F. (1) (1) Dip. di Fisica, Università di Genova, Via Dodecaneso 33, 16146 Genova, Italy
11:45	<b>Roll-to-roll deposition of 2D TMD nanoflake films for large area solar energy conversion</b> Rebekah A. Wells, Charles R. Lhermitte, Marina C. Caretti, Kevin Sivula Ecole Polytechnique Federal de Lausanne (LIMNO), Los Alamos National Laboratory, EPFL (LIMNO), EPFL (LIMNO)	H 1.10	
12:00	<b>DISCUSSION</b>		

16:00	<b>A tunable structural family with ultralow thermal conductivity: copper deficient Cu<sub>1-x</sub>Pb<sub>1-x</sub>Bi<sub>1+x</sub>S<sub>3</sub></b> Krishnendu Maji,[a] Pierric Lemoine,[b]* Adèle Renaud,[b] Bin Zhang,[c,d] Xiaoyuan Zhou,[c,d] Virginia Carnevali,[e] Christophe Candolfi,[f] Bernard Raveau,[a], Rabih Al Rahal Al Orabi,[e] Marco Fornari,[e],* Paz Vaquero,[g] Mathieu Pasturel,[b] Carmelo Prestipino,[b] Emmanuel Guilmeau[a]* [a] CRISMAT, CNRS, Normandie Univ, ENSICAEN, UNICAEN, 14000 Caen, France [b] Univ Rennes, ISCR – UMR 6226, CNRS, F-35000 Rennes, France [c] College of Physics and Institute of Advanced Interdisciplinary Studies, Chongqing University, Chongqing 401331, China [d] Analytical and Testing Center of Chongqing University, Chongqing 401331, China [e] Department of Physics and Science of Advanced Materials Program, Central Michigan University, Mt. Pleasant, MI 48859, USA [f] Institut Jean Lamour, UMR 7198 CNRS – Université de Lorraine, 2 allée André Guinier-Campus ARTEM, BP 50840, 54011 Nancy Cedex, France [g] Department of Chemistry, University of Reading, Whiteknights, Reading, RG6 6DX, United Kingdom	H 2.10	16:45	<b>Optical properties of 2D PtSe<sub>2</sub> investigated using spectroscopic ellipsometry</b> Nikolay Minev (1)*, Krastyo Buchkov (1,2), Rosen Todorov (1), Vladimira Videva (1,3), Mariya Stefanova (1), Hristosko Dikov (4), Deyan Dimov (1), Ivalina Avramova (5), Dimitre Dimitrov (1,2) and Vera Marinova (1) 1 Institute of Optical Materials and Technologies, Bulgarian Academy of Sciences, Sofia, Bulgaria 2 Institute of Solid State Physics, Bulgarian Academy of Sciences, Sofia, Bulgaria 3 Faculty of Chemistry and Pharmacy, Sofia University, 1164 Sofia, Bulgaria, 4 Central Laboratory of Solar Energy and New Energy Sources, Bulgarian Academy of Sciences, Sofia, Bulgaria 5 Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria	H 3.8
16:15	<b>DISCUSSION</b>		16:45	<b>Thickness dependent optical properties of large-area continuous 2D WSe<sub>2</sub> films</b> Irnik Dionisievs*, I.D.(1), Nikolay Minev, N.M.(1), Vladimira Videva, V.V.(1), Krastyo Buchkov, K.B.(1,2), Vera Marinova, V.M.(1), Hristosko Dikov, H.D.(3), Tsvetanka Babeva, T.B.(1), Velichka Strijkova, V.S.(1), Dimitre Dimitrov, D.D.(1,2) (1) Institute of Optical Materials and Technologies, Bulgarian Academy of Sciences, Bulgaria, (2) Institute of Solid State Physics, Bulgarian Academy of Sciences, Bulgaria, (3) Central Laboratory of Solar Energy and New Energy Sources, Bulgarian Academy of Sciences, Bulgaria,	H 3.9
16:30			16:45	<b>Hybrid electrochemical capacitors based on Transition Metal Dichalcogenides and mesoporous carbons</b> Masoud Foroutan Koudahi, Elzbieta Frackowiak* Poznan University of Technology, Institute of Chemistry and Technical Electrochemistry, Berdychowo 4, 60-965, Poznan, Poland	H 3.10
	<b>- I : RAJEEV AHUJA</b>		16:45	<b>Phase structure of LCO thin film cathodes physical vapor deposited on Si</b> Maria J. Ramirez-Peral 1 2 3, Jesús Díaz-Sánchez 1, Arturo Galindo 3 4, I. Salazar-Beitia 4, H. van der Meulen 2 5, Miguel Crespillo 6, Carmen Morant 2 4, Enrique Vasco 3 and Celia Polop 1 2 7. 1 Departamento de Física de la Materia Condensada, Universidad Autónoma de Madrid, Spain, 2 Instituto Universitario de Ciencia de Materiales Nicolás Cabrera, Universidad Autónoma de Madrid, Spain, 3 Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Spain, 4 Departamento de Física Aplicada, Universidad Autónoma de Madrid, Madrid, Spain, 5 Departamento de Física de Materiales, Universidad Autónoma de Madrid, Spain, 6 Centro de Micro-Análisis de Materiales, Universidad Autónoma de Madrid, Madrid, Spain, 7 Condensed Matter Physics Center (IFIMAC), Universidad Autónoma de Madrid, Madrid, Spain,	H 3.11
16:45	<b>Deep insights into kinetics and structural evolution of dimension-engineered TiNb<sub>2</sub>O<sub>7</sub> anode for lithium storage</b> Wenlei Xu[1], Yaolin Xu[2], Veronika Grzimek[2], Thorsten Schultz[3], Yan Lu[2], Norbert Koch[3], Nicola Pinna[1] [1] Institut für Chemie and IRIS Adlershof, Humboldt-Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany [2] Department of Electrochemical Energy Storage, Helmholtz-Zentrum Berlin für Materialien und Energie, 14109 Berlin, Germany [3] Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Albert-Einstein Str. 15, 12489 Berlin, Germany	H 3.1	16:45	<b>Carbon/MoS<sub>2</sub> composites modified with redox species as an electrode materials in supercapacitors</b> Maciej Tobis*(1), Elzbieta Frackowiak(1) * lead presenter (1) Poznan University of Technology, Institute of Chemistry and Technical Electrochemistry, 60 – 965 Poznań, Berdychowo 4, Poland	H 3.12
16:45	<b>Preparation of Piezoelectric PVDF-TrFE Thin Film for Wearable Electronics</b> Turdakyn, N.(1), Bekezhankyzy, Z.(1), Kim, A.(1), Adair, D.(1) & Kalimuldina, G.*(1). (1) Nazarbayev University, Kazakhstan * lead presenter	H 3.2	16:45	<b>Modelling the visibility of dichalcogenide nanolayers on diamond</b> Cuenca, J.A.*(1), Thomas, E.L.H.(1), Williams, O.A.(1), Singh, R.P.(2), Mandal, S.(1) (1) School of Physics and Astronomy, Cardiff University, Cardiff CF24 3AA, Wales, UK (2) Department of Physics, Indian Institute of Science Education and Research Bhopal, Bhopal, 462066, India	H 3.13
16:45	<b>Preparation of a flexible freestanding electrode based on PEDOT:PSS for Li-S batteries</b> Assyl Adylkhanova, Gulnur Kalimuldina*, Arailym Nurpeissova, Zhumabay Bakenov Assyl Adylkhanova (Department of Chemical and Materials Engineering, School of Engineering and Digital Sciences, Nazarbayev University) Gulnur Kalimuldina* (Department of Mechanical and Aerospace Engineering, School of Engineering and Digital Sciences, Nazarbayev University) Arailym Nurpeissova (National Laboratory Astana, Nazarbayev University) Zhumabay Bakenov (Department of Chemical and Materials Engineering, School of Engineering and Digital Sciences, Nazarbayev University)	H 3.3	16:45	<b>Direct synthesis of the planar and vertical graphene on Si(100) for photovoltaic applications</b> Š. Meškiniš, R. Gudaitis, Š. Jankauskas, A. Guobienė, M. Andrulevičius, A. Vasiliauskas Institute of Materials Science of Kaunas University of Technology, K. Baršausko 59, Kaunas, Lithuania	H 3.14
16:45	<b>Effect of Direct Carbothermic Reduction-cum-Zinc doping on the Phase, Crystallinity, and Specific Capacitance of 1-D Iron/Carbon</b> Richard Appiah-Ntiamoah, Hern Kim Myongji University, Department of Energy Science and Technology, Environmental Waste Recycle Institute, Republic of Korea	H 3.4	16:45	<b>Improved capacity performance on graphene-C<sub>3</sub>N<sub>4</sub>-MnO<sub>2</sub> ternary structure supercapacitor electrode</b> Alexandru-Cosmin Obreja, Cosmin Romanitan, Vasilica Tucureanu, Gabriel Crăciun, Marius Stoian, Irina Bratoșin, Andrei Avram, Mircea Dragoman National Institute for Research and Development in Microtechnologies (IMT – Bucharest), 126A Erou Iancu Nicolae Street, 077190, Bucharest, Romania	H 3.15
16:45	<b>Binder-free Ti<sub>3</sub>C<sub>2</sub>TX/W<sub>18</sub>O<sub>49</sub> Composite for flexible quasi-solid-state asymmetric supercapacitor</b> Shuang Liu <sup>1</sup> , Ting Zeng <sup>1</sup> , Qijin Wan <sup>1</sup> , and Nianjun Yang <sup>2</sup> <sup>1</sup> School of Chemistry and Environmental Engineering, Key Laboratory for Green Chemical Process of Ministry of Education, Hubei Key Lab of Novel Reactor and Green Chemical Technology, Wuhan Institute of Technology, Wuhan 430073, China. <sup>2</sup> Institute of Materials Engineering, University of Siegen, Siegen 57076, Germany	H 3.5			
16:45	<b>First-Principles Investigation of the Electronic Properties of 2-D Organic-TMDC Heterostructures*</b> E. Black, J. Morbec School of Chemical and Physical Sciences, Keele University, UK	H 3.6			
16:45	<b>Facile Synthesis and Electrochemical studies of Graphene oxide as an Electrode material for Supercapacitor Application</b> Itum Ruti (1), Jyoti Jaiswal (2*),Sanjeev Kumar (3*) 1,2,3 -Centre of Advanced Research, Department of Physics, Rajiv Gandhi University, Arunachal Pradesh 791112, India	H 3.7			

Tuesday may 31

-IV : RAJEEV AHUJA

- 09:00 **INV Relativistic effects in CoPt thin films: Giant magnetic anisotropy energy and impact of single atomic defects and vacancies** H 4.1  
Samy Brahimi, Samir Lounis  
Laboratoire de Physique et Chimie Quantique, Université Mouloud Mammeri  
Tizi-Ouzou, B.P.No.17 RP, 15000 Tizi-Ouzou, Algeria, Peter Gruenberg Institut and  
Institute for Advanced Simulation, Forschungszentrum Juelich, 52425 Juelich &  
JARA, Germany
- 09:30 **Vanadium Intercalated Cobalt Trimesic MOF Composite for Enhanced Solid-State Asymmetric Supercapacitor Storage** H 4.2  
Monojit Mondal, Dipak Kumar Goswami, Tarun Kanti Bhattacharyya  
School of Nano Science and Technology, IIT Kharagpur, Kharagpur, INDIA-721302,  
Department of Physics, IIT Kharagpur, Kharagpur, INDIA-721302, Department of  
Electronics and Electrical Communication Engineering, IIT Kharagpur, Kharagpur,  
INDIA-721302
- 09:45 **On the charge storage mechanism of solvent co-intercalation of TIS2 electrodes in sodium-ion batteries** H 4.3  
Guillermo A. Ferrero, Gustav Åvall, Youhyun Son, Knut Janßen, Katherine Mazzio  
and Philipp Adelhelm  
Humboldt Universität zu Berlin, Institut für Chemie, Brook-Taylor-Str. 2, 12489  
Berlin, Germany
- 10:00 **Can tannic acid, a small molecule, replace the polymeric binders of silicon electrodes in lithium-ion batteries?** H 4.4  
Nassima KANA, Bernard Humbert, Thomas DEVIC and Bernard LESTRIEZ  
Université de Nantes, CNRS, Institut des Matériaux Jean Rouxel, IMN, F-44000  
Nantes, France
- 10:15 **Towards the development of 2D MoS<sub>2</sub>/c-Si heterojunction photovoltaics.** H 4.5  
Bienlo Zerbo(1), Mircea Modreanu(2), Ian Povey (2), Antoine Létoublon(1), Alain  
Rolland(1), Laurent Pédesseu(1), Jacky Even(1), Bruno Lépine(3), Pascal  
Turban(3), Philippe Schieffer(3), Alain Moréac(3), Olivier Durand(1).  
(1) Univ Rennes, INSA Rennes, CNRS, Institut FOTON - UMR 6082, F-35000  
Rennes, France, (2) Tyndall National Institute, University College Cork, Lee  
Maltings, Dyke Parade, T12 R5CP Cork, Ireland, (3) Univ Rennes, CNRS, IPR  
(Institut de Physique de Rennes)-UMR 6251, Rennes, France.
- 10:30 **DISCUSSION**
- 10:45
- 11:00 **A tunable structural family with ultralow thermal conductivity: copper deficient Cu<sub>1-x</sub>Pb<sub>1-x</sub>Bi<sub>1+x</sub>S<sub>3</sub>** H 4.6  
Krishnendu Maji,[a] Pierrick Lemoine,[b],\* Adèle Renaud,[b] Bin Zhang,[c,d] Xiaoyuan  
Zhou,[c,d] Virginia Carnevali,[e] Christophe Candolfi,[f] Bernard Raveau,[a], Rabi  
Al Rahal Al Orabi,[e] Marco Fornari,[e],\* Paz Vaqueiro,[g] Mathieu Pasturel,[b]  
Carmelo Prestipino,[b] Emmanuel Guilmeau[a],\*  
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[b] Univ Rennes, ISCR – UMR 6226, CNRS, F-35000 Rennes, France [c] College  
of Physics and Institute of Advanced Interdisciplinary Studies, Chongqing University,  
Chongqing 401331, China [d] Analytical and Testing Center of Chongqing  
University, Chongqing 401331, China [e] Department of Physics and Science  
of Advanced Materials Program, Central Michigan University, Mt. Pleasant, MI  
48859, USA [f] Institut Jean Lamour, UMR 7198 CNRS – Université de Lorraine, 2  
allée André Guinier-Campus ARTEM, BP 50840, 54011 Nancy Cedex, France [g]  
Department of Chemistry, University of Reading, Whiteknights, Reading, RG6 6DX,  
United Kingdom
- 11:15 **Reduced Graphene-oxide – Poly(ionic liquid) electrodes for flexible high** H 4.7  
Guemiza, H.\*, Pham-Truong, T.N., Vidal, F., Plesse, C., Aubert, P-H.  
CY Cergy Paris Université, LPPI, F-95000 Cergy
- 11:30 **Advanced in modeling the oxygen evolution reaction** H 4.8  
Maytal Caspary Toroker  
Department of Materials Science and Engineering, Technion - Israel Institute of  
Technology, Haifa 3600003, Israel

- 11:45 **Nanoengineering of a layered BiSbTe alloy to enhance its thermoelectric properties** H 4.9  
Amir Pakdel, Takao Mori  
Department of Mechanical, Manufacturing & Biomedical Engineering, Trinity College  
Dublin, The University of Dublin, D02PN40 Dublin, IRELAND, National Institute for  
Materials Science (NIMS), 1-1 Namiki, Tsukuba, Ibaraki, 305-0044 JAPAN
- 12:00 **DISCUSSION**
- 12:15 **LUNCH AND PLENARY**
- V : RAJEEV AHUJA
- 15:00 **Thermoelectric power factor optimization in two-dimensional materials** H 5.1  
Zhen Li\*, Patrizio Graziosi, and Neophytos Neophytou  
School of Engineering, University of Warwick, Coventry, CV4 7AL, UK Consiglio  
Nazionale delle Ricerche ? Istituto per lo Studio dei Materiali Nanostrutturati, CNR ?  
ISMN, via Gobetti 101, 40129, Bologna, Italy
- 15:15 **Investigation on the growth of CuCoO<sub>2</sub> delafossite as a Hole Transparent Layer for high-performance perovskite solar cells** H 5.2  
Hasnae Chfi, Amal Bouich, Lahoucine Atourki, Bérnabe Mari, Mohamed Abdlefdil,  
Laboratory MANAPSE, University Mohammed V, Rabat, Morocco Institut de  
Disseny i Fabricació, Universitat Politècnica, València, Spain
- 15:30 **Electric and thermoelectric properties of supported 2D materials** H 5.3  
Salvatore Timpa, Mehrdad Rahimi, Jacko Rastikian, Stéphan Suffit, François Mallet,  
Philippe Lafarge, Clément Barraud, and Maria Luisa Della Rocca  
Salvatore Timpa, Mehrdad Rahimi, Jacko Rastikian, Stéphan Suffit, Philippe  
Lafarge, Clément Barraud affiliated to Laboratoire Matériaux et Phénomènes  
Quantiques, Université de Paris, CNRS-UMR7162, 75013 Paris, France François  
Mallet affiliated Laboratoire Matériaux et Phénomènes Quantiques, Université de  
Paris, CNRS-UMR7162, 75013 Paris, France and Sorbonne Université, UFR925,  
75005 Paris, France
- 15:45 **DISCUSSION AND CLOSING**