

nanoGe Fall Meeting19 (NGFM19)

#PERInt19. Interplay of composition, structure and electronic properties in halide-perovskites

Berlin, Germany, 2019 November 4th - 6th

Conference Chairs: Pablo P. Boix, Juan-Pablo Correa-Baena and Antonio Abate

Conference Program

November 4th - Day 2 (Monday)	
Plenary Session	
09:00 - 09:30 Session-K1	<u>Efrat Lifshitz</u> (<i>Schulich Faculty of Chemistry, Solid State Institute, Russell Berrie Nanotechnology Institute and the Helen Diller Quantum Information Center; Technion, Haifa, Israel</i>), Maksym Kovalenko, Andrew Rappe The Effect of Magnetism on the Optical Properties of Bulk and Confined Perovskite Structures
09:00 - 09:30 Session-K2	<u>Daniel Nocera</u> (<i>Harvard University</i>) Sustainable and Renewable Carbon and Nitrogen Cycles for Fuel and Crop Production
PERInt 1.1 Chair: Antonio Abate	
09:30 - 10:00 1.1-O1	<u>Emilio J Juarez-Perez</u> (<i>ARAID Foundation</i>) Release of Sym-triazine and HCN During the Thermal Degradation of FA Based Hybrid Perovskites at Low T Conditions
10:00 - 10:30 1.1-O2	<u>T. Jesper Jacobsson</u> (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany</i>), Eva Unger The Power of the Crowd. What Could be Learned by Collective Pooling of all the World's Perovskite Device Data, and How do We Get There?
10:30 - 11:00	Coffee Break
PERInt 1.2 Chair: Antonio Abate	
11:00 - 11:15 1.2-O1	<u>Loreta A. Muscarella</u> (<i>Center for Nanophotonics, AMOLF, Science Park 104, The Netherlands</i>), Eline M. Hutter, Sandy Sanchez, Christian D. Dieleman, Tom J. Savenije, Anders Hagfeldt, Michael Saliba, Bruno Ehrler Crystal Orientation and Grain Size: Do They Matter for Optoelectronic Properties of MAPbI ₃ Perovskite?
11:15 - 11:30 1.2-O2	<u>Marion Flatken</u> (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany</i>), Nga Phung, Antonio Abate, Armin Hoell, Robert Wendt Structural Properties of Perovskite Layers in High-Performance Solar Cells
11:30 - 12:00 1.2-I1	<u>Selina Olthof</u> (<i>Institute of Physical Chemistry, University of Cologne</i>) Determination of the Electronic Structure of Lead and Tin based Perovskites
12:00 - 12:30 1.2-I2	<u>Nitin Padture</u> (<i>Brown University</i>) The Materials Science of Halide Perovskites and Solar Cells
12:30 - 14:00	Lunch
PERInt 1.3 Chair: Pablo P. Boix	
14:00 - 14:15 1.3-O1	<u>Pierfrancesco Aversa</u> (<i>LSI, CEA/DRF/IRAMIS, Ecole Polytechnique, CNRS, Institut Polytechnique de Paris, F-91128 Palaiseau</i>), Senol Öz, Eunhwan Jung, Olivier Plantevin, Olivier Cavani, Nadège Ollier, Bernard Geffroy, Sanjay Mathur, Catherine Corbel Radiative Recombination in Quadruple Cation Organic-Inorganic Mixed Halide Perovskite Layers: Electron Irradiation Induced Ageing Effects

14:15 - 14:30	<u>Robin Kerremans</u> (<i>Sêr Cymru Sustainable Advanced Materials</i>)
1.3-O2	On the Electro-optics of the Carbon Stack Perovskite Solar Cells
14:30 - 14:45	<u>Stelios Choulis</u> (<i>Molecular Electronics and Photonics Research Unit, Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, Cyprus</i>)
1.3-O3	The Role of Interfaces on the Device Performance of Inverted Perovskite Photovoltaics
14:45 - 15:00	<u>Adam Pockett</u> (<i>SPECIFIC, Swansea University</i>), Matt Carnie
1.3-O4	Utilizing Optoelectronic Characterization Techniques in the Development of Triple Mesoporous Perovskite Solar Cells
15:00 - 15:30	<u>Germà Garcia-Belmonte</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I</i>)
1.3-I1	Capacitive Response of Photovoltaic Perovskites: Defects, Interfaces and Contact Reactivity

15:30 - 16:00 **Coffee Break**

PERInt 1.4

Chair: Pablo P. Boix

16:00 - 16:30	<u>Thomas Mayer</u> (<i>Institute of Material Science, Technische Universität Darmstadt, 64287 Darmstadt, Germany</i>), Michael Wussler, Cittaranjan Das, Iwan Zimmermann, Mohammad Khaja Nazeeruddin, Wolfram Jaegermann
1.4-O1	Tapered Cross Section Photo Electron Spectroscopy of a State of the Art Mixed Ion Perovskite Solar Cell: Band Bending Profile in the Dark and Photo-Potential Profile Under Open Circuit Illumination
16:30 - 17:00	<u>Sofia Masi</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I</i>), Salim K. M. Muhammed, Iván Mora-Seró
1.4-O2	Interaction between Perovskite and PbS QDs towards an Improved Material

November 5th - Day 3 (Tuesday)

Plenary Session

08:30 - 09:00	<u>Juan Bisquert</u> (<i>1 Institute of Advanced Materials (INAM), Universitat Jaume I, Castellon, 12006 (Spain)</i>)
Session-K1	Understanding Time Scales of Ionic and Electronic Phenomena in Perovskite Solar Cells
08:30 - 09:00	<u>William Tisdale</u> (<i>Massachusetts Institute Of Technology</i>)
Session-K2	Nonequilibrium Dynamics of Excitons and Charges in Semiconductor Nanomaterials

PERInt 2.1

Chair: Juan-Pablo Correa-Baena

09:00 - 09:30	<u>Jafar Khan</u> (<i>King Abdullah University of Science and Technology (KAUST), KAUST Solar Center (KSC), Physical Sciences and Engineering Division (PSE), Material Science and Engineering Program (MSE)</i>), Esma Ugur, Erkan Aydin, Mindaugas Kirkus, Marios Neophytou, Stefaan De Wolf, Iain McCulloch, Frederic Laquai
2.1-O1	Probing Carrier Extraction from Lead Halide Perovskite to Polymeric Charge Transport Layers by Ultrafast Transient Absorption Spectroscopy
09:30 - 10:00	Adrián Francisco-López, Bethan Charles, Oliver J. Weber, M. Isabel Alonso, Miquel Garriga, Mariano Campoy-Quiles, Mark T. Weller, <u>Alejandro R. Goñi</u> (<i>Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Campus UAB, 08193 Bellaterra, Spain</i>)
2.1-O2	Equal Footing of Thermal Expansion and Electron-Phonon Interaction in the Temperature Dependence of Lead Halide Perovskite Band Gaps
10:00 - 10:30	<u>Jose Marquez Prieto</u> (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany</i>), Pascal Becker, Justus Just, Hannes Hempel, Chen Li, Charles Hages, Roland Mainz, Thomas Unold
2.1-O3	Interplay between Composition, Structural Transitions and Optoelectronic Properties in Fully Inorganic CsPbI3 Perovskites

10:30 - 11:00 **Coffee Break**

PERInt 2.2

Chair: Juan-Pablo Correa-Baena

11:00 - 11:30	<u>Annamaria Petrozza</u> (<i>Istituto Italiano di Tecnologia (IIT), Genova, Italy</i>)
2.2-I1	Understanding Defect Physics to Stabilize Metal-halide Perovskite Semiconductors for Optoelectronic Applications

11:30 - 12:00	Felix Deschler (<i>Walter Schottky Institut and Physics Department, Technische Universität München, 85748 Garching, Germany</i>) Ultrafast Spectroscopy of Carrier and Spin Dynamics in Hybrid Perovskites
2.2-I2	
12:00 - 12:30	William Tisdale (<i>Massachusetts Institute Of Technology</i>) Exciton-Exciton and Exciton-Lattice Interactions in 2D and 0D Perovskites
2.2-O1	
12:30 - 14:00	Lunch
	PERInt 2.3 Chair: Emilio J. Juarez-Perez
14:00 - 14:30	Konrad Domanski (<i>Fluxim AG</i>), Brian Carlsen, Anand Agrawalla, Essa Alharbi, Michael Graetzel, Anders Hagfeldt, Wolfgang Tress Performance of Perovskite Solar Cells under Real-World Temperature-Illumination Variations in the Lab
2.3-O1	
14:30 - 14:45	Qiong Wang (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany</i>), Antonio Abate How to Improve the Stability of All Inorganic Perovskite Solar Cells?
2.3-O2	
14:45 - 15:00	Esma Ugur (<i>King Abdullah University of Science and Technology (KAUST), KAUST Solar Center (KSC), Physical Sciences and Engineering Division (PSE), Material Science and Engineering Program (MSE)</i>), Jafar I. Khan, Erkki Alarousu, Martin Ledinsky, Sandra P. Gonzalez-Lopez, Ahmed H. Balawi, Erkan Aydin, Michele De Bastiani, Stefaan De Wolf, Frédéric Laquai Change in Excited State Dynamics of Perovskite Solar Cells after Exposure to Humid Air under Illumination
2.3-O3	
15:00 - 15:15	Mriganka Singh (<i>Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan</i>), Hong-Cheu Lin, Chih-Wei Chu, Gang Li A Superficial new Solid-State Synthesis of SnO ₂ for High-Performance and Stable Perovskite Solar Cells
2.3-O4	
15:15 - 15:30	Nga Phung (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany</i>), Hans Köbler, Diego Di Girolamo, Thi Tuyen Ngo, Gabrielle Sousa e Silva, Ivan Mora-Seró, Bernd Rech, Antonio Abate Impact of Alkaline Earth Metal Doping on the Stability of Perovskite Solar Cells
2.3-O5	
15:30 - 16:00	Coffee Break
	PERInt 2.4 Chair: Emilio J. Juarez-Perez
16:00 - 16:30	David Cahen (<i>Weizmann Institute of Science & Bar Ilan University</i>) Can Halide Perovskites Teach Us New Materials Chemistry and Physics?
2.4-I1	
16:30 - 16:45	Moritz Futscher (<i>Center for Nanophotonics, AMOLF, Science Park 104, The Netherlands</i>), Mahesh Gangishetty, Daniel Congreve, Bruno Ehrler The Effect of Manganese Doping on Mobile Ions in Perovskite Light-emitting Diodes
2.4-O1	
17:00 - 19:00	Poster Session
November 6th - Day 4 (Wednesday)	
	PERInt 3.1 Chair: Pablo P. Boix
09:30 - 10:00	Qing Shen (<i>The University of Electro-Communications, Japan</i>), Feng Liu, Chao Ding, Yaohong Zhang, Taro Toyoda, Shuzi Hayase Phase Stable and Less-Defect Perovskite Quantum Dots: Optical Property, Photoexcited Hot Carrier Dynamics, Charge Transfer and Application to Optoelectronic Devices
3.1-I1	
10:00 - 10:30	Michael Saliba (<i>Adolphe Merkle Institute, University of Fribourg, CH-1700 Fribourg, Switzerland</i>) Polyelemental, Multicomponent Perovskite Semiconductor Libraries through Combinatorial Screening
3.1-I2	
10:30 - 11:00	Coffee Break
	PERInt 3.2 Chair: Iván Mora-Seró

11:00 - 11:30 3.2-I1	<u>Emilio Palomares</u> (<i>Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST), Spain</i>) Carrier Recombination and Ion Migration: Role of the Contacts.
11:30 - 11:45 3.2-O1	<u>Chandni Devi</u> (<i>National Institute for Technical Teachers Training and Research</i>), Rajesh Mehra Performance Investigation of CH₃NH₃SnI₃ Solar Cell with HTM of CuSbS₂
11:45 - 12:00 3.2-O2	<u>Hamid M. Ghaithan</u> (<i>Physics and Astronomy, Science Collage, King Saud University</i>), Zeyad A. Alahmed, Saif Qaid, Mahmoud Hezam, Abdullah Ahdwayyan First-principles Investigation of Structural, Electronic and Optical Properties of CsPb (I_{1-x}Br_x)₃ (x = 0.0 –1.0) Compounds
12:00 - 12:15 3.2-O3	<u>Ihteaz M. Hossain</u> (<i>Institute of Microstructure Technology, Karlsruhe Institute of Technology, Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany</i>), Saba Gharibzadeh, Paul Fassl, Bahram A. Nejand, Raphael Schmager, Tobias Abzieher, Jonas A. Schwenzer, Uli Lemmer, Bryce S. Richards, Ulrich W. Paetzold Perovskite Tandem Photovoltaics: Employing 2D/3D Perovskite Heterostructure for Perovskite Top Solar Cell with Engineered Bandgap
12:15 - 12:30 3.2-O4	<u>Thibault Lemerrier</u> (<i>LEPMI / Université Savoie Mont Blanc</i>), Lara Perrin, Emilie Planès, Solenn Berson, Lionel Flandin Compatible Integration of ITO in NIP and PIN Perovskite Solar Cells for Semi-transparent Devices Using Same ETL and HTL
12:30 - 14:00	Lunch
	PERInt 3.3 Chair: Qing Shen
14:00 - 14:30 3.3-O1	<u>Eline Hutter</u> (<i>Center for Nanophotonics, AMOLF, Science Park 104, 1098 XG Amsterdam, The Netherlands</i>), Loreta Muscarella, Lucie McGovern, Bruno Ehrler Manipulating Halide Segregation in Mixed-Halide Perovskites with Pressure
15:30 - 16:00	Coffee Break