

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 1 Chair: Roel van de Krol Room: Plenum
09:00 - 09:30 1-K1	<u>Daniel Nocera</u> (<i>Harvard University</i>) Sustainable and Renewable Carbon and Nitrogen Cycles for Fuel and Crop Production
	Plenary Session 2 Chair: Cristiane Morais Smith Room: Breakout 1
09:00 - 09:30 2-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
	PERInt 1.1 Chair: Antonio Abate Room: Breakout 4
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 Room: Breakout 4
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>University of Cologne, Institute for Physical Chemistry</i>) Determination of the Electronic Structure of Lead and Tin based Perovskites
12:00 - 13:30	Lunch
	PERInt 1.3 Chair: Pablo P. Boix Room: Breakout 4

13:30 - 14:00	<u>Nitin Padture</u> (<i>Brown University</i>)
1.3-I1	The Materials Science of Halide Perovskites and Solar Cells
14:00 - 14:15	<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
1.3-O1	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>Cyprus University of Technology</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>Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain</i>)
1.3-I2	Capacitive Response of Photovoltaic Perovskites: Defects, Interfaces and Contact Reactivity
15:30 - 16:00	Coffee Break
PERInt 1.4 Chair: Pablo P. Boix Room: Breakout 4	
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>Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain</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 3 Chair: Marcus Scheele Room: Plenum	
08:30 - 09:00	<u>William Tisdale</u> (<i>Massachusetts Institute Of Technology</i>)
3-K1	Nonequilibrium Dynamics of Excitons and Charges in Semiconductor Nanomaterials
Plenary Session 4 Chair: Pablo P. Boix Room: Breakout 4	
08:30 - 09:00	<u>Juan Bisquert</u> (<i>Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain</i>)
4-K1	Understanding Time Scales of Ionic and Electronic Phenomena in Perovskite Solar Cells
PERInt 2.1 Chair: Juan-Pablo Correa-Baena Room: Breakout 4	
09:00 - 09:30	<u>Jafar Khan</u> (<i>King Abdullah University of Science and Technology (KAUST) - Saudi Arabia</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 2.1-O2	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>) Equal Footing of Thermal Expansion and Electron-Phonon Interaction in the Temperature Dependence of Lead Halide Perovskite Band Gaps
10:00 - 10:30 2.1-O3	<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 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 Room: Breakout 4
11:00 - 11:30 2.2-I1	<u>Annamaria Petrozza</u> (<i>Istituto Italiano di Tecnologia (IIT), Genova, Italy</i>) Understanding Defect Physics to Stabilize Metal-halide Perovskite Semiconductors for Optoelectronic Applications
11:30 - 12:00 2.2-I2	<u>Felix Deschler</u> (<i>Walter Schottky Institut and Physics Department, Technische Universität München, 85748 Garching, Germany</i>) Ultrafast Spectroscopy of Carrier and Spin Dynamics in Hybrid Perovskites
12:00 - 13:30	Lunch
	PERInt 2.3 Chair: Emilio J. Juarez-Perez Room: Breakout 4
13:30 - 14:00 2.3-O1	<u>William Tisdale</u> (<i>Massachusetts Institute Of Technology</i>) Exciton-Exciton and Exciton-Lattice Interactions in 2D and 0D Perovskites
14:00 - 14:30 2.3-O2	<u>Konrad Domanski</u> (<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
14:30 - 14:45 2.3-O3	<u>Qiong Wang</u> (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany</i>), Antonio Abate How to Improve the Stability of All Inorganic Perovskite Solar Cells?
14:45 - 15:00 2.3-O4	<u>Esma Ugur</u> (<i>King Abdullah University of Science and Technology (KAUST) - Saudi Arabia</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
15:00 - 15:15 2.3-O5	<u>Nga Phung</u> (<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
15:15 - 15:30	
15:30 - 16:00	Coffee Break
	PERInt 2.4 Chair: Emilio J. Juarez-Perez Room: Breakout 4
16:00 - 16:30 2.4-I1	<u>David Cahen</u> (<i>Weizmann Institute and Bar-Ilan University</i>) Can Halide Perovskites Teach Us New Materials Chemistry and Physics?
16:30 - 16:45 2.4-O1	<u>Moritz Futscher</u> (<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
17:00 - 19:00	Poster Session

November 6th - Day 4 (Wednesday)

Plenary Session 5

Chair: Jacky Even
Room: Plenum

09:00 - 09:30 David Mitzi (*Duke University*)

5-K1 Organic-Inorganic Perovskites: Unrivalled Versatility for Semiconductor Design and Fabrication

Plenary Session 6

Chair: Erwin Reisner
Room: Breakout 4

09:00 - 09:30 Jenny Zhang (*Department of Chemistry, University of Cambridge - UK*)

6-K1 Semi-artificial Photosynthesis: a Platform for Studying and Wiring Photosynthesis

PERInt 3.1

Chair: Pablo P. Boix
Room: Breakout 4

09:30 - 10:00 Qing Shen (*The University of Electro-Communications, Japan*), Feng Liu, Chao Ding, Yaohong Zhang, Taro Toyoda, Shuzi Hayase

3.1-I1 Phase Stable and Less-Defect Perovskite Quantum Dots: Optical Property, Photoexcited Hot Carrier Dynamics, Charge Transfer and Application to Optoelectronic Devices

10:00 - 10:30 Michael Saliba (*Adolphe Merkle Institute, University of Fribourg, CH-1700 Fribourg, Switzerland*)

3.1-I2 Polyelemental, Multicomponent Perovskite Semiconductor Libraries through Combinatorial Screening

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

PERInt 3.2

Chair: Iván Mora-Seró
Room: Breakout 4

11:00 - 11:30 Emilio Palomares (*Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST)*)

3.2-I1 Carrier Recombination and Ion Migration: Role of the Contacts.

11:30 - 12:00 Ajay Ram Srimath Kandada (*Center for Nanoscience and Technology, Istituto Italiano di Tecnologia, Via Pascoli 70/3, Milano 20133, Italy.*), Felix Thouin, Carlos Silva

3.2-I2 On the Nature of Exciton-Bath Interactions in Two-Dimensional Lead Halide Perovskites

12:00 - 13:30 **Lunch**

PERInt 3.3

Chair: Qing Shen
Room: Breakout 4

13:30 - 13:45 Ihtezaz M. Hossain (*Institute of Microstructure Technology, Karlsruhe Institute of Technology, Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany*), Saba Gharibzadeh, Paul Fassel, Bahram A. Nejand, Raphael Schmager, Tobias Abzieher, Jonas A. Schwenzer, Uli Lemmer, Bryce S. Richards, Ulrich W. Paetzold

3.3-O1 Perovskite Tandem Photovoltaics: Employing 2D/3D Perovskite Heterostructure for Perovskite Top Solar Cell with Engineered Bandgap

13:45 - 14:00 Thibault Lemerrier (*LEPMI / Université Savoie Mont Blanc*), Lara Perrin, Emilie Planès, Solenn Berson, Lionel Flandin

3.3-O2 Compatible Integration of ITO in NIP and PIN Perovskite Solar Cells for Semi-transparent Devices Using Same ETL and HTL

14:00 - 14:30 Eline Hutter (*Center for Nanophotonics, AMOLF, Science Park 104, 1098 XG Amsterdam, The Netherlands*), Loreta Muscarella, Lucie McGovern, Bruno Ehrler

3.3-O3 Manipulating Halide Segregation in Mixed-Halide Perovskites with Pressure

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