Online nanoGe Fall Meeting 20 (OnlineNFM20)

#PerFun20. Perovskite I: Solar Cells and Related Optoelectronics

2020 October 20th - 21st
Conference Chairs: Monica Lira-Cantu, Mohammad Nazeeruddin and Sam Stranks

Conference Program

October 20th - Day 1 (Tuesday)	
08:30 - 08:35	**PerFun Opening nanoGe**
08:35 - 08:45	**PerFun Session Introduction 1.1**
	PerFun 1.1 Chair: Monica Lira-Cantu
08:45 - 09:05 1.1-I1	Nam-Gyu Park *(Sungkyunkwan University, South Korea)* Perovskite Solar Cells: Efficiency, Stability and Upscaling
09:05 - 09:25 1.1-I2	Anders Hagfeldt *(EPFL École Polytechnique Fédérale de Lausanne, Department of Chemical Sciences and Engineering, Switzerland)* Nanoscale Solar Energy Converters
09:25 - 09:45 1.1-I3	Jovana Milic *(EPFL École Polytechnique Fédérale de Lausanne, Laboratory of Photonics and Interfaces, Switzerland)*, Marco Alejandro Ruiz-Preciado, Dominik Kubicki, Albert Hofstetter, Lyndon Emsley, Michael Graetzel A Supramolecular Approach to Hybrid Perovskite Photovoltaics
09:45 - 10:05	Discussion
	PerFun 1.2 A Chair: Anders Hagfeldt
10:05 - 10:15 A-T1	Sarthak Jariwala *(University of Washington, US)*, Sven Burke, Sean Dunfield, Clayton Shallcross, Margherita Taddei, Jian Wang, Giles E Eperon, Neal R Armstrong, Joseph J Berry, David S Ginger Approaching the Limits of Optoelectronic Performance in Mixed Cation Mixed Halide Perovskites by Controlling Surface Recombination
10:15 - 10:25 A-T2	Loreta A. Muscarella *(Center for Nanophotonics, AMOLF, The Netherlands)*, Eline Hutter, Francesca Wittmann, Young Won Woo, Young-Kwang Jung, Lucie McGovern, Jan Versluis, Aron Walsh, Huib Bakker, Bruno Ehrler Lattice compression increases the activation barrier for phase segregation in mixed-halide perovskites
10:25 - 10:35 A-T3	Emilio Gutierrez-Partida *(University of Potsdam, Institute of Physics and Astronomy)*, Hannes Hempel, Sebastian Caicedo-Davila, Meysam Raoufi, Francisco Peña-Camargo, Max Grischek, René Gunder, Jonas Diekmann, Pietro Caprioglio, Kai O. Brinkmann, Hans Kobler, Thomas Riedl, Antonio Abate, Daniel Abou-Ras, Thomas Unold, Dieter Neher, Martin Stolterfoht Stable double cation perovskites with 18 µs lifetime and high luminescence yield for efficient inverted perovskite solar cells
10:35 - 10:45 A-T4	Johanna Siekmann *(IEK-5 Photovoltaik, Forschungszentrum Jülich GmbH, Germany)*, Zhifa Liu, Thomas Kirchartz High Open-Circuit Voltages of 1.35 V in CH3NH3Pb(I,Br)3 Solar Cells
10:45 - 11:15	Discussion
	PerFun 1.2 B Chair: Yulia Galagan

10:05 - 10:15 B-T1	Max Grischek *(Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Young Investigator Group Perovskite Tandem Solar Cells)*, Pietro Caprioglio, Hannes Hempel, José Antonio Márquez Prieto, Ivona Kafedjiska, Thomas Unold, Iver Lauermann, Martin Stolterfoht, Dieter Neher, Steve Albrecht Finding the Most Promising Route for All-Inorganic Perovskites with PL Measurements: The PCE Potential of the Most Relevant Compositions and Transport Layers
10:15 - 10:25 B-T2	Julia Zillner *(Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), 70563 Stuttgart, Germany)*, Erik Ahlswede, Michael Powalla Interface Optimization in FASnI3 Perovskite Solar Cells
10:25 - 10:35 B-T3	Sofia Masi *(Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain)*, Juan Ignacio Climente Plasencia, Iwan Moreels, Iván Mora-Seró Stabilization of FAPbI3 by PbS quantum dots and nanoplatelets
10:35 - 10:45 B-T4	Prachi Rastogi *(Sorbonne Université, CNRS, Institut des NanoSciences de Paris, INSP, France)*, Audrey Chu, Grégory Vincent, Emmanuel Lhuillier Infrared Detection in Perovskite Nanocrystals via PbS Nanocrystals Doping
10:45 - 11:15	Discussion
11:15 - 12:00	**PerFun Break**
12:00 - 12:05	**PerFun Introduction nanoGe**
	PerFun 1.3 A Chair: Nam-Gyu Park
12:05 - 12:15 A-T1	Leonardo Buizza *(Department of Physics, University of Oxford, Clarendon Laboratory)*, Zhiping Wang, Timothy Crothers, Rebecca Milot, Henry Snaith, Michael Johnston, Laura Herz Charge-carrier dynamics, mobilities and diffusion lengths of 2D-3D lead halide perovskites
12:15 - 12:25 A-T2	Francisco Peña-Camargo *(University of Potsdam, Institute of Physics and Astronomy)*, Pietro Caprioglio, Fengshuo Zu, Emilio Gutierrez-Partida, Christian M. Wolf, Kai Brinkmann, Steve Albrecht, Thomas Riedl, Norbert Koch, Dieter Neher, Martin Stolterfoht Halide Segregation versus Interfacial Recombination in Bromide-Rich Wide-Gap Perovskite Solar Cells
12:25 - 12:35 A-T3	Kunal Datta *(Molecular Materials and Nanosystems, Eindhoven University of Technology, Netherlands)*, Bas van Gorkom, Matthew Dyson, Martijn Wienk, Rene Janssen Wide-Bandgap Perovskites in the Spotlight: Multimodal Study of Photo-Induced Halide Segregation in Solar Cells
12:35 - 12:45 A-T4	Katarzyna Pydzińska-Białek *(Adam Mickiewicz University Poznań, Poland)*, Viktoriia Drushliak, Emerson Coy, Karol Załęski, Jessica Flach, Jesus Idigoras, Lidia Contreras-Bernal, Anders Hagfeldt, Juan Anta, Marcin Ziółek The Interface Charge Transport in the Triple-Cation Perovskite Solar Cells
12:45 - 13:15	Discussion
	PerFun 1.3 B Chair: Giulia Grancini
12:05 - 12:15 B-T1	Thijs J.A.M. Smolders *(University of Bath, Department of Physics)*, Matthew J. Wolf, Alison B. Walker 3D to 2D Transition of Anion Mobility in CsPbBr3 under Pressure
12:15 - 12:25 B-T2	José C. Conesa *(Instituto de Catálisis y Petroleoquímica, CSIC)*, Federico M. Serrano-Sánchez, Joao E. Rodrigues, Carlo Marini, José L. Martínez, José A. Alonso, Gregorio García-Moreno, Pablo Palacios, Eduardo A. Menéndez-Proupin, Ana L. Montero-Alejo, Perla Wahnón Cr2+-substituted lead halide perovskites: materials with an in-gap band
12:25 - 12:35 B-T3	Lisa Krückemeier *(Forschungszentrum Jülich, IEK5-Photovoltaics)*, Benedikt Krogmeier, Zhifa Liu, Uwe Rau, Thomas Kirchartz Understanding Transient Photoluminescence in Halide Perovskite Layer Stacks and Solar Cells
12:35 - 12:45 B-T4	Junke Jiang *(Eindhoven University of Technology, Department of Applied Physics)*, Feng Liu, Ionut Tranca, Qing Shen, Shuxia Tao Atomistic and Electronic Origin of Phase Instability of Metal Halide Perovskites
12:45 - 13:15	Discussion

13:15 - 13:20	**PerFun Short Break**
13:20 - 13:30	**PerFun Session Introduction 1.4**
	PerFun 1.4 Chair: Mohammad Nazeeruddin
13:30 - 13:50 1.4-I1	Alison Walker *(University of Bath, Department of Physics)*, Matthew Wolf, Lewis Irvine, Thijs Smolders Multiscale modelling of perovskite solar cells
13:50 - 14:10 1.4-I2	Yana Vaynzof *(Integrated Centre for Applied Physics and Photonic Materials and Centre for Advancing Electronics Dresden (cfaed), Technical University of Dresden, Germany)* A General Approach to High Efficiency Perovskite Solar Cells by Any Antisolvent
14:10 - 14:30 1.4-I3	Giulia Grancini *(Department of Chemistry, University of Pavia)* 2D/3D Hybrid Perovskite Dynamical Interfaces Stable and Efficient Solar Cells
14:30 - 14:50	Discussion
14:50 - 16:30	**ePoster Session**

October 21st - Day 2 (Wednesday)	
08:30 - 08:35	**PerFun Introduction nanoGe**
08:35 - 08:45	**PerFun Session Introduction 2.1**
	PerFun 2.1 Chair: Sam Stranks
08:45 - 09:05 2.1-I1	Eva Unger *(Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany)*, Janardan Dagar, Katrin Hirselandt, Aboma Merdasa, Rahim Munir, Jinzhao Li, Florian Mathies Insight into perovskite thin film growth enables rational process design
09:05 - 09:25 2.1-I2	Yulia Galagan *(National Taiwan University, Department of Materials Science and Engineering)* Perovskite Solar Cells from Lab to Fab: the Main Challenges and Solutions
09:25 - 09:45 2.1-I3	Eugene A. Katz *(Ben-Gurion University of the Negev, Department of Solar Energy and Environmental Physics, Swiss Inst. for Dryland Environmental and Energy Research, J. Blaustein Institutes for Desert Research)* How to Assess Operational Stability of Perovskite Solar Cells: Understanding Their Degradation Pathways
09:45 - 10:05	Discussion
	PerFun 2.2 A Chair: Eva Unger
10:05 - 10:15 A-T1	Simon Kahmann *(Zernike Institute for Advanced Materials, University of Groningen, The Netherlands)*, Maria Antonietta Loi Broad Emission Bands in Two-Dimensional Perovskites and the Role of Exciton Self-Trapping
10:15 - 10:25 A-T2	Adam Wright *(Department of Physics, University of Oxford)*, George Volonakis, Juliane Borchert, Christopher Davies, Feliciano Giustino, Michael Johnston, Laura Herz Novel Absorption Feature due to Intrinsic Quantum Confinement in FAPbI3
10:25 - 10:35 A-T3	Juan Bisquert *(Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain)* Spectral Correlation of Electooptical Frequency Techniques in Perovskite Solar Cells Beyond Impedance Spectroscopy
10:35 - 10:45 A-T4	Agustin O. Alvarez *(Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain)*, Clara A. Aranda, Ramón Arcas, Vivek Babu, Loengrid Bethencourt, Elena Mas-Marzá, Konrad Wojciechowski, Michael Saliba, Francisco Fabregat-Santiago Transport and interfacial effects in Perovskite Solar Cells
10:45 - 11:15	Discussion
	PerFun 2.2 B Chair: Morten Madsen
10:05 - 10:15 B-T1	Babak Taheri *(CHOSE- Centre for Hybrid and Organic Solar Energy, Department of Electronics Engineering, University of Rome "Tor Vergata", Rome)*, Emanuele Calabrò, Francesca De Rossi, Giulia Lucarelli, Fabio Matteocci, Diego Di Girolamo, Giorgio Cardone, Andrea Liscio, Aldo Di Carlo, Thomas M. Brown, Francesca Brunetti Large-scale, low-temperature, conformable spray deposition of tin oxide films for perovskite solar cells
10:15 - 10:25 B-T2	Florian Mathies *(Young Investigator Group, Hybrid Materials Formation and Scaling, Helmholtz-Zentrum Berlin)*, Felix Hermerschmidt, Vincent R.F. Schröder, Carolin Rehermann, Nicolas Zorn Molares, Eva L. Unger, Emil J. W. List-Kratochvil INKJET-PRINTED METAL HALIDE PEROVSKITE LIGHT EMIITING DIODES
10:25 - 10:35	
10:35 - 10:45 B-T3	Johannes Küffner *(Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW), 70563 Stuttgart, Germany)*, Tina Wahl, Moritz Schultes, Jonas Hanisch, Julia Zillner, Erik Ahlswede, Michael Powalla Nanoparticle Wetting Agent for Gas Stream-Assisted Blade Coated Inverted Perovskite Solar Cells and Modules
10:45 - 11:15	Discussion
11:15 - 12:00	**PerFun Break**

12:00 - 12:05	**PerFun Introduction nanoGe**
	PerFun 2.3 Chair: Eugene Katz
12:05 - 12:15 2.3-T1	Jeffrey DuBose *(Radiation Laboratory, University of Notre Dame, US)*, Preethi Mathew, Prashant Kamat Modulation of Photo Induced Iodine Expulsion in Mixed Halide Perovskites with Electrochemical Bias
12:15 - 12:25 2.3-T2	Ankur Solanki *(School of Technology, Pandit Deendayal Petroleum University, Gandhinagar, Gujarat 382007, India)*, Tze Chien Sum, Mohammad Mahdi Tavakoli Heavy Water: A Solvent Additive to Enhance Efficiency in Perovskite Solar Cells
12:25 - 12:35 2.3-T3	Ganbaatar Tumen-Ulzii *(Kyushu University, Center for Organic Photonics and Electronics Research (OPERA), c/o Japan Science and Technology Agency (JST), ERATO, Adachi Molecular Exciton Engineering Project, Japan)*, Toshinori Matsushima, Chihaya Adachi Thermally Stable Perovskite Solar Cells with Chemically Doped Spiro-OMeTAD Hole Transport Layer
12:35 - 12:45 2.3-T4	Aniruddha Ray *(CompuNet, Istituto Italiano di Tecnologia (IIT), Genova)*, Beatriz Martín-García, Alberto Martinelli, Liberato Manna, Ahmed Abdelhady Understanding the local structural effects on halogen ion migration in layered methylammonium copper halide memory devices
12:35 - 12:45 2.3-T5	Emmanuel Péan *(SPECIFIC – Swansea University, Materials Research Centre, College of Engineering, UK)*, Stoichko Dimitrov, Catherine De Castro, Matthew Davies Interpreting Time-Resolved Photoluminescence of Perovskite Materials
12:45 - 13:15	Discussion
13:15 - 13:20	**PerFun Short Break**
13:20 - 13:30	**PerFun Session Introduction 2.4**
	PerFun 2.4 Chair: Mohammad Nazeeruddin
13:30 - 13:50 2.4-I1	Nakita Noel *(Princeton Institute for the Science and Technology of Materials, Priceton University)* Mitigating Interfacial Defects in Halide Perovskites
13:50 - 14:10 2.4-I2	Nitin Padture *(Brown University)* The Materials Science of Halide Perovskites for Solar Cells
14:10 - 14:30	Discussion
14:30 - 14:35	**PerFun Closing**

Poster Contribution

099	Syed Ghufran Hashmi *(Microelectronics Research Unit, Faculty of Information Technology and Electrical Engineering, University of Oulu - Finland)*, Maryam Borghei, Taina Lamminmäki High Performance and Electrochemically Active Carbon Composite Catalyst-based Counter Electrodes Outperforming Pt Catalyst with Copper Electrolytes in Dye-sensitized Solar Cells
219	Jorge Martins *(LEPABE - Laboratory for Process Engineering, Environment, Biotechnology and Energy, Faculty of Engineering, University of Porto, Portugal)*, Seyedali Emami, Ruben Madureira, Joaquim Mendes, Dzmitry Ivanou, Adélio Mendes Ultra Low Temperature Laser-Assisted Glass Frit Encapsulation of n-i-p Perovskite Solar Cells
225	Apostolos Ioakeimidis *(Cyprus University of Technology)*, Stelios Choulis Nitrobenzene as Additive to Improve Reproducibility and Degradation Resistance of Highly Efficient Methylammonium-Free Inverted Perovskite Solar Cells

230	Deimante Vaitukaityte *(Department of Organic Chemistry, Kaunas University of Technology)*, Giedre Bubniene, Artiom Magomedov, Egidijus Kamarauskas, Vygintas Jankauskas, Maryte Daskeviciene, Amran Al-Ashouri, Brone Barvainiene, Steve Albrecht, Vytautas Getautis Cross-linkable Fluorene-based Enamines as Hole Transporting Materials for Perovskite Solar Cells
231	Rhys Kennard *(University of California, Santa Barbara)*, Clayton Dahlman, Ryan DeCrescent, Jon Schuller, Kunal Mukherjee, Ram Seshadri, Michael Chabinyc Ferroelastic Hysteresis in MAPbI3 Films
232	Moritz Loy *(Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW) Stuttgart, Germany)*, Erik Ahlswede Perovskite-CIGS 4T Tandem Solar Cells with Thin IZO Rear Electrodes
233	Fedros Galatopoulos *(Cyprus University of Technology, Mechanical Engineering and Materials Science and Engineering)*, Ioannis Papadas, Apostolos Ioakeimidis, Polyvios Eleftheriou, Stelios Choulis SURFACE TREATMENT OF Cu:NiOx HOLE-TRANSPORTING LAYER USING β-ALANINE FOR HYSTERESIS-FREE AND THERMALLY STABLE INVERTED PEROVSKITE SOLAR CELLS
238	Jeffrey DuBose *(Department of Chemistry, University of Notre Dame)*, Preethi Mathew, Prashant Kamat Modulation of Photo Induced Iodine Expulsion in Mixed Halide Perovskites with Electrochemical Bias
242	Walter O. Herrera Martínez, Paula Giudici, Natalia B. Correa Guerrero, Martin Alurralde, Maria Dolores Perez *(Departamento Energía Solar, Instituto de Nanociencia y Nanotecnología, CNEA-CONICET, Av. Gral. Paz 1499, (1650) San Martín, Buenos Aires, Argentina)* High energy proton irradiation on MAPbI3 films for space applications observed by micro-Raman spectroscopy
248	Cedric Gonzales *(Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain)*, Hakimeh Teymourinia, Juan Jesús Gallardo, Masoud Salavati-Niasari, Juan Bisquert, Javier Navas, Antonio Guerrero Thin Silver Buffer Layer as Reactive Ion Scavenger for Interfacial Passivation of Perovskite Solar Cells
250	Simone Sansoni *(University of Padova, Department of Chemical Sciences)*, Michele De Bastiani, Erkan Aydin, Esma Ugur, Furkan Halis Isikgor, Areej Al-Zahrani, Francesco Lamberti, Frederic Laquai, Moreno Meneghetti, Stefaan De Wolf Eco-Friendly Spray Deposition of Perovskite Films on Macroscale Textured Surfaces
259	Ramón Arcas *(Institute of Advanced Materials (INAM), Universitat Jaume I, 12006 Castelló, Spain)*, Agustin O. Alvarez, Clara A. Aranda, Loengrid Bethencourt, Elena Mas-Marzá, Michael Saliba, Francisco Fabregat-Santiago Negative in Capacitance and Inverted Hysteresis: Matching Features Perovskite Solar Cells
266	Juan F. Galisteo-López *(Instituto de Ciencia de Materiales de Sevilla (CSIC-US), ES)*, David O. Tiede, Mauricio E. Calvo, Hernán Míguez Phase Segregation in Mixed-Halide Perovskites: The role of the Iodide Defect Structure and its Local Rearrangement
269	M. Cordoba, M. Unmüssig, W. Würfel, K. Taretto *(Departamento de Electrotecnia (FAIN-UNCo), Buenos Aires 1400, (8300) Neuquén, Argentina)* Bias and light step-response in double-cation perovskite solar cells explained by ionmediated interface recombination
272	Yolanda Pérez *(Instituto IMDEA Energía and Universidad Rey Juan Carlos (URJC))*, Patricia Horcajada Stable lead-free hybrid perovskite based on iodobismuthates