

International Conference on Hybrid and Organic Photovoltaics (HOPV24)

València, Spain, 2024 May 12th - 15th

Conference organizers: Bruno Ehrler and Jovana Milic

Conference Program

May 12th - Day 1 (Sunday) 1	
17:30 - 19:30	Registration
18:00 - 19:00	Welcome drink
May 13th - Day 2 (Monday) 2	
08:00 - 08:40	Registration
08:40 - 08:50	Opening
08:50 - 09:00	Chair Opening - Emerging materials and technologies (EPV)
	Session 1A - Emerging materials and technologies (EPV) Chair: Giulia Grancini
09:00 - 09:40 (EPV)-K1	<u>Thuc-Quyen Nguyen</u> (<i>Center for Polymers and Organic Solids and Department of Chemistry and Biochemistry University of California, Santa Barbara</i>) Insights into Degradation Mechanisms of Bulk Heterojunction Organic Solar Cells
09:40 - 10:10 (EPV)-I1	<u>Hemamala Karunadasa</u> (<i>Stanford University</i>) Abstract of Hemamala Karunadasa
10:10 - 10:15 (EPV)-S1	<u>Taro Tanabe</u> (<i>Tokyo Chemical Industry Co., Ltd. (TCI)</i>) Tokyo Chemical Industry - Industry Talk
10:15 - 10:45 (EPV)-I2	<u>David Mitzi</u> (<i>Department of Mechanical Engineering and Materials Science, Duke University, Durham, NC USA</i>) Structure-Property Tunability Using Chirality and Symmetry Breaking in Hybrid 2D Perovskites
10:45 - 11:30	Coffee Break
	Session 1B1 - Material design and modelling Chair: Virginia Carnevali
11:40 - 12:10 modelling-I1	<u>Marina Leite</u> (<i>UC Davis</i>) Tackling Stability in Halide Perovskites with Machine Learning
12:10 - 12:40 modelling-IS1	<u>Shuxia Tao</u> (<i>Computational Materials Physics, Applied Physics, Eindhoven University of Technology, the Netherlands.</i>) Materials Theory of Halide Perovskites: Insights from Atomistic and Molecular Modeling
12:40 - 13:10 modelling-IS2	<u>Aron Walsh</u> (<i>Faculty of Engineering, Department of Materials, Imperial College, London</i>) Machine Learning Perovskites
	Session 1B2 - Breaking efficiency limits Chair: Nakita Noel
11:40 - 12:10 limits-I1	Colette Sullivan, <u>Lea Nienhaus</u> (<i>Florida State University, Department of Chemistry and Biochemistry</i>) Replacing Rubrene in Perovskite-Sensitized Photon Upconversion
12:10 - 12:25 limits-IS1	<u>Olindo Isabella</u> (<i>TU Delft</i>) Abstract of Olindo Isabella
12:25 - 12:40 limits-IS2	<u>Akshay Rao</u> (<i>University of Cambridge</i>) Singlet Fission based Photon Multiplication to enhance Si PV efficiency
12:40 - 12:55 limits-IS3	<u>Ulrich W. Paetzold</u> (<i>Light Technology Institute (LTI) at Karlsruhe Institute of Technology (KIT), Karlsruhe, Engesserstr. 13, 76131, Germany</i>) Will Vapor Phase Deposition of Perovskite Photovoltaics Accelerate Commercialization?
12:55 - 13:10 limits-IS4	<u>Thomas Hannappel</u> (<i>Ilmenau University of Technology, Institute of Physics, Germany</i>), M. A. Zare Pour, S. Shekarabi, A. Paszuk, D. Ostheimer, W. Jaegermann, W.-H. Cheng, O. Romanyuk, E. Runge, F. Dimroth, H. A. Atwater Tandem cells for efficient photoelectrochemical solar fuels production
	Session 1B3 - Operational and material stability Chair: Sofia Masi
11:40 - 12:10 stability-I1	<u>Monica Lira</u> (<i>Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Campus UAB, Bellaterra, Barcelona, Catalonia, 08193, Spain</i>) Additive Engineering in Halide Perovskite/MXene Perovskite Solar Cells
12:10 - 12:25 stability-IS1	<u>Ángela Sastre-Santos</u> (<i>Área de Química Orgánica, Instituto de Bioingeniería, Universidad Miguel Hernández, Avda. Universidad S/N, 03202, Elche, Spain</i>) Arylamine Zinc and Copper Phthalocyanines as Outstanding Hole Transporting Materials in Perovskite Solar Cells
12:25 - 12:40 stability-IS2	<u>Iván Mora-Seró</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, Av. De Vicent Sos Baynat, s/n 12071 Castelló, Spain</i>) Advances in Sn-Perovskite Solar Cells
12:40 - 12:55 stability-IS3	<u>Emilio Palomares</u> (<i>ICREA, Passeig Lluís Companys 23, 08010, Barcelona, Spain</i>) Molecular photovoltaic devices: The Central Role of Chemistry.
12:55 - 13:10 stability-IS4	Victoria Ozerova, Marina Ustinova, Nikita Emelianov, Sergey Vasil'ev, Dmitry Kirukhin, Ivan Zhidkov, Sergey Aldoshin, <u>Pavel Troshin</u> (<i>Zhengzhou Research Institute, Harbin Institute of Technology, 26 Longyuan East 7th, Jinshui District, Zhengzhou, Henan Province, 450000, China</i>) Ultrahigh radiation hardness of complex lead halides: where are the limits?
	Session 1B4 - HOPV Rising Stars: Emerging photovoltaics Chair: Jovana Milic



11:40 - 11:55 photovoltaics-O5	<u>Jovana Milic</u> (<i>University of Fribourg, Adolphe Merkle Institute</i>) HOPV Rising Stars: Chair introduction - Jovana Milic
11:55 - 12:10 photovoltaics-O6	<u>Eline Hutter</u> (<i>Utrecht University, Inorganic Chemistry and Catalysis, Debye Institute for Nanomaterials Science, Netherlands</i>), Huygen Jöbsis, Loreta Muscarella, Kostas Fykouras, Linn Leppert Tuning optical and mechanical properties of Cs ₂ AgBiBr ₆ double perovskites by controlled alloying
12:10 - 12:25 photovoltaics-O1	<u>Loreta Muscarella</u> (<i>Department of Physics and Astronomy, Faculty of Sciences, Vrije Universiteit Amsterdam</i>), Huygen J. Jöbsis, Bettina Baumgartner, P. Tim Prins, D. Nicolette Maaskant, Andrei V. Petukhov, Dmitry Chernyshov, Charles J McMonagle, Eline M. Hutter Exploring Temperature- and Pressure-Dependent Elastic Properties of Halide Perovskites and Elpasolites
12:25 - 12:40 photovoltaics-O2	<u>Davide Moia</u> (<i>Max Planck Institute for Solid State Research, Physical Chemistry of Solids, Stuttgart, 70569, Germany</i>), Mina Jung, Ya-Ru Wang, Joachim Maier Impedance models addressing ion transport and electron-hole recombination in halide perovskite based devices
12:40 - 12:55 photovoltaics-O3	<u>Martin Ledinsky</u> (<i>Institute of Physics of the Czech Academy of Sciences, Cukrovarnicka 10, 16200 Prague, Czech Republic.</i>), Ales Vlk, Robert Hlavac, Lucie Landova, Antonin Fejfar Universal Formation Mechanism of Halide Perovskite Thin Films
12:55 - 13:10 photovoltaics-O4	<u>Sandheep Ravishanker</u> (<i>Forschungszentrum Jülich, Institute of Energy and Climate Research, IEK-5 Photovoltaics</i>) Discerning Rise Time Constants to Quantify Charge Carrier Extraction in Perovskite Solar Cells
13:10 - 15:30	Lunch Break
Session 1C1 - Material design and modelling Chair: Virginia Carnevali	
15:30 - 16:00 modelling-IS1	<u>Saiful Islam</u> (<i>Department of Materials, University of Oxford; Oxford, UK</i>) From Pb to Mixed Pb-Sn Perovskites: Atomic-Scale Insights into Ion Transport and Molecular Passivation
16:00 - 16:15 modelling-IS2	<u>Alison Walker</u> (<i>Department of Physics University of Bath, BA2 7AY, UK</i>), Samuel McCallum, Jamie Lerpiniere Understanding perovskite solar cell physics through combining modelling and machine learning
16:15 - 16:30 modelling-IS3	<u>George Volonakis</u> (<i>Univ Rennes, ENSCR, INSA Rennes, CNRS, ISCR - UMR 6226, F-35000 Rennes, France.</i>) Materials design of halide perovskites and beyond: Opto-electronic properties, and charge carrier mobilities from first principles.
16:30 - 16:45 modelling-O1	<u>Lavrenty Gutsev</u> (<i>Federal Research Center for Problems of Chemical Physics and Medicinal Chemistry of the Russian Academy of Sciences (FRC PCP MC RAS), Academician Semenov ave. 1, Chernogolovka, Moscow Region, 142432, Russian Federation</i>), Pavel Troshin, Xueqing Xu, Yupeng Zheng, Ramu Ramachandran, Shuguang Cao, Zukang Chen, Shizi Luo Joint Studies of Perovskite Passivation strategies: The Theoretical Part of the Story
16:45 - 17:00 modelling-O2	<u>Maxime Siber</u> (<i>Forschungszentrum Jülich GmbH, Helmholtz-Institute Erlangen-Nürnberg (HI ERN), 91058 Erlangen, Germany</i>), Olivier Ronsin, Jens Harting Simulation of Morphology Formation in Organic Photoactive Layers
17:00 - 17:15 modelling-O3	<u>Simon Ternes</u> (<i>CHOSE, Centre for Hybrid and Organic Solar Energy, Department of Electronic Engineering, University of Rome "Tor Vergata", Rome, Italy</i>), Alessio Gagliardi, Aldo Di Carlo Deep-Learning enhanced literature analysis on parameter specification in solution processing of hybrid perovskite solar cells
Session 1C2 - Breaking efficiency limits Chair: Nakita Noel	
15:30 - 15:45 limits-IS1	Andrea Cordaro, Ralph Muller, Stefan Tabernig, Nico Tucher, Patrick Schygulla, Oliver Hohn, Benedikt Blasi, <u>Albert Polman</u> (<i>Center for Nanophotonics, AMOLF</i>) Integrated near-field/far-field light scattering design creates 36,1% efficient Si/III-V multijunction solar cell
15:45 - 16:00 limits-O1	<u>Hang Hu</u> (<i>Institute of Microstructure Technology (IMT), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany.</i>), David B. Ritzer, Sophie X. An, Yang Li, Alexander Diercks, Roja Singh, Seyedamir Orooji, Qihao Jin, Paul Fassl, Felix Laufer, Thomas Feeney, Ting Pan, Bahram Abdollahi Nejand, Ulrich W. Paetzold Efficient p-i-n-based FAPbI ₃ perovskite solar cells for scalable solar modules and triple-junction photovoltaics
16:00 - 16:15 limits-O2	<u>Marcel Roß</u> (<i>Helmholtz-Zentrum Berlin für Materialien und Energie, Division Solar Energy, 12489 Berlin, Germany</i>), Stefanie Severin, Aleksandra Miskiewicz, Viktor Škorjanc, Lars Korte, Steve Albrecht Analyzing and Optimizing the Composition of Co-Evaporated Wide Band Gap Perovskite-Absorbers
16:15 - 16:30 limits-O3	<u>Klara Suchan</u> (<i>Department of Mechanical Engineering, Stanford University</i>), T. Jesper Jacobsson, Carolin Rehmann, Eva L. Unger, Thomas Kirchartz, Christian Wolff Rationalizing Performance Losses of Wide Bandgap Perovskite Solar Cells Evident in Data from the Perovskite Database
16:30 - 16:45 limits-O4	<u>Jessica Barichello</u> (<i>ISM-CNR, Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche, Via del Fosso del Cavaliere 100, 00133, Roma, Italy</i>), Farshad Jafarzadeh, Gyanendra Shank, Paolo Mariani, Francesca Brunetti, Aldo Di Carlo, Fabio Matteocci Bridging the gap: Wide-bandgap perovskite solar cells for transparent and efficient BIPVs
16:45 - 17:00 limits-O5	<u>Nicholas Sloane</u> (<i>School of Physics, University of New South Wales, Sydney, New South Wales 2052, Australia</i>), Jianghui Zheng, Christopher G. Bailey, Anita W. Y. Ho-Baillie, Timothy W. Schmidt, Dane R. McCamey Determining the Role of 2D Perovskite Passivation Layer on Bulk Perovskite-Sensitised Photochemical Upconversion
17:00 - 17:15 limits-O6	<u>Damon de Clercq</u> (<i>UNSW Sydney</i>), Jiale Feng, Parisa Hosseinabadi, Michael Nielsen, Matthew Brett, Shyamal Prasad, Abbas Farahani, Hsiu Li, Samuel Sanders, Jonathon Beves, Ned Ekins-Daukes, Jared Cole, Pall Thordarson, Murad Tayebjee, Timothy Schmidt, Ben Carwithen Resolving the emissive intermediate in singlet fission
Session 1C3 - Operational and material stability Chair: Sofia Masi	
15:30 - 15:45 stability-IS1	<u>Wolfgang Tress</u> (<i>Institute of Computational Physics, Zurich University of Applied Sciences, Winterthur, Switzerland</i>) Stability - From Perovskite Solar Cells to Memristors
15:45 - 16:00 stability-O1	Ji-Youn Seo, <u>Sun-Ju Kim</u> (<i>Department of Nano Fusion Technology, Pusan National University, Busan 46241, Republic of Korea</i>) Interfacial engineering through lead binding using crown ethers in perovskite solar cells
16:00 - 16:15 stability-O2	<u>Jarla Thiesbrummel</u> (<i>AMOLF</i>), Sahil Shah, Henry Snaith, Martin Stollerfoht Ion induced field screening governs the early performance degradation of perovskite solar cells
16:15 - 16:30 stability-O3	<u>Philippe Holzhey</u> (<i>Department of Physics, University of Oxford, UK</i>), David McMeekin, Sebastian Fürer, Steven Harvey, Laura Schelhas, James Ball, Suhas Mahesh, Seongrok Seo, Nicholas Hawkins, Jianfeng Lu, Michael Johnston, Joseph Berry, Udo Bach, Henry Snaith Intermediate-Phase Engineering via Dimethylammonium Cation Additive for Stable Perovskite Solar Cells



16:30 - 16:45 stability-O4	<u>Florine Rombach</u> (<i>Department of Physics, University of Oxford, UK</i>), Akash Dasgupta, Manuel Kober-Czerny, James Ball, Joel Smith, Heon Jin, Michael Farrer, Henry Snaith Stability of narrow bandgap lead-tin perovskite material and photovoltaic devices
16:45 - 17:00 stability-O5	<u>Elnaz Ghahremani Rad</u> (<i>Laboratory for Solar Energy and Fuels (LSEF) School of Engineering, The University of British Columbia</i>), Abraha Tadese Gidey, Towhid Chowdhury, Alexander R. Uhl Advancing Operational Stability of Inverted Perovskite Solar Cells Utilizing Parylene-C Encapsulation Techniques
17:00 - 17:15 stability-O6	<u>Fredrik Johansson</u> (<i>Condensed Matter Physics of Energy Materials, Division of X-ray Photon Science, Department of Physics and Astronomy, Uppsala University</i>), Azmat Ali, Herve Crugel, Erika Giangrisostomi, Ruslan Ovsyanniikov, Mathieu Silly, Lenart Dudy, Ute Cappel, Emmanuel Lhuillier, Nadine Witkowski The Electronic Impact of Light-induced Degradation in CsPbBr ₃ Perovskite Nanocrystals at Gold Interfaces
Session 1C4 - Emerging photovoltaics Chair: Davide Moia	
15:30 - 15:45 photovoltaics-IS1	<u>Tom Savenije</u> (<i>Department of Chemical Engineering, Technical University Delft, The Netherlands</i>), Jiashang Zhao, Xiaohui Liu, Bahiya Ibrahim, Jos Thieme, Lara van der Poll, Shuxia Tao, Lars Bannenberg Interplay between Structure and Charge Carrier Dynamics in CsMAFA-based Perovskites
15:45 - 16:00 photovoltaics-O1	<u>Alan Dunbar</u> (<i>University of Sheffield, Department of Chemical and Biological Engineering</i>), Adam Urwick, Suleiman Bello, Malin Johansson Dynamics of perovskite synthesis in alcohol
16:00 - 16:15 photovoltaics-O2	<u>Ana Palacios Saura</u> (<i>Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Hahn-Meitner-Platz 1, 14109 Berlin, Germany</i>), Joachim Breternitz, Armin Hoell, Susan Schorr Precrystallisation Arrangement in Halide Perovskites Precursor Solutions
16:15 - 16:30 photovoltaics-O3	<u>Aruna Ivaturi</u> (<i>Smart Materials Research and Device Technology Group, Department of Pure and Applied Chemistry, University of Strathclyde, Glasgow G1 1XL, UK</i>) Indoor light harvesting perovskite solar cells on TCO-free ultrathin deformable substrates
16:30 - 16:45 photovoltaics-O4	<u>Heon Jin</u> (<i>Department of Physics, University of Oxford, UK</i>), Henry Snaith Highly efficient and stable thermal evaporated lead-tin perovskites
16:45 - 17:00 photovoltaics-O5	<u>Asayil Alsulami</u> (<i>Material Science and Engineering, KAUST Solar Centre, Physical science and engineering division, King Abdullah University of Science and Technology, 4700 KAUST, Thuwal 23955-6900, Kingdom of Saudi Arabia</i>), Luis Lanzetta, Derya Baran Illuminating the Degradation Mechanism of Hybrid Tin-Lead Perovskites: A Foundation for Rational Stability Enhancement Strategies
17:00 - 17:15 photovoltaics-O6	<u>Jeffrey Capitão</u> (<i>LEPABE - Laboratory for Process Engineering, Environment, Biotechnology and Energy, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal.</i>), Dzmitry Ivanou, Adélio Mendes Rethinking Dye-Sensitized Solar Cell Design with Carbon Paper Counter Electrodes
Special Session: in the honor of Prof. Michael Graetzel Chair: Jovana Milic	
17:15 - 17:30 Graetzel-I1	<u>Anders Hagfeldt</u> (<i>Department of Chemistry - Ångström Laboratory, Uppsala University, Uppsala, Sweden</i>) Brief Overview on the Development of Dye-Sensitized and Perovskite Solar Cells
17:30 - 17:45 Graetzel-I2	<u>Marina Freitag</u> (<i>Newcastle University, Newcastle upon Tyne, NE1 7RU, United Kingdom.</i>) Revolutionizing Indoor Energy Harvesting: From Advanced Materials to AI Integration
17:45 - 18:00 Graetzel-I3	<u>Udo Bach</u> (<i>ARC Centre of Excellence for Exciton Science, Monash University</i>) 25 years of spiro-OMeTAD
18:00 - 18:15 Graetzel-I4	<u>Michael Graetzel</u> (<i>Ecole Polytechnique Federale de Lausanne (EPFL)</i>) Special Talk
18:15 - 19:30	Poster session

**May 14th - Day 3 (Tuesday) 3**08:40 - 08:50 **Announcement of the day**08:50 - 09:00 **Chair opening - Organic photovoltaics (OPV)****Session 2A - Organic photovoltaics (OPV)**

Chair: Derya Baran

09:00 - 09:40 Natalie Stingelin (*School of Materials Science and Engineering Georgia Institute of Technology Atlanta, GA 30332, USA*)

(OPV)-K1 Designing solution-processed photonic light- and heat-management structures for solution-processable and printable solar cells

09:40 - 10:10 Anna Köhler (*Soft Matter Optoelectronics and Bayreuth Institute of Macromolecular Research (BIMF), University of Bayreuth, 95440 Bayreuth, Germany*)

(OPV)-I1 Identifying role of aggregates in PM6/Y6 organic solar cells by optical spectroscopy

10:10 - 10:15 Royal Society of Chemistry RSC (*Royal Society of Chemistry*)

(OPV)-S1 Royal Society of Chemistry Industry talk

10:15 - 10:45 Jenny Nelson (*Department of Physics and Centre for Processable Electronics, Imperial College London, London SW7 2AZ, UK*)

(OPV)-I2 Exploring charge pair generation in single-component organic photovoltaic devices

10:45 - 11:30 **Coffee Break****Session 2A1 - Advanced characterization and automation**

Chair: Wiebke Albrecht

11:40 - 12:10 Selina Olthof (*University of Cologne*)

automation-I1 Probing the Electronic Structure of 3D and 2D Halide Perovskites

12:10 - 12:25 Pablo P. Boix (*Instituto de Tecnología Química, Universitat Politècnica de València - Consejo Superior de Investigaciones Científicas (UPV-CSIC), Avd. de los Naranjos s/n, Valencia 46022, Spain*)

automation-IS1 Device-oriented perovskite crystallization

12:25 - 12:40 Juan Bisquert (*Institute of Advanced Materials (INAM), Universitat Jaume I, Av. De Vicent Sos Baynat, s/n 12071 Castellò, Spain*)

automation-IS2 Controlling capacitive and inductive hysteresis processes of halide perovskite for solar cell and neuromorphic applications

12:40 - 12:55 Omer Yaffe (*Weizmann Institute of Science, Herzl St. 234, Rehovot 7610001, Israel*)

automation-IS3 Coupled vibrational modes in organic crystals

12:55 - 13:10 Dominik Kubicki (*School of Chemistry, University of Birmingham, Birmingham, B15 2TT, UK*)

automation-IS4 Atomic-level structure of small organic molecules on halide perovskite surfaces

Session 2B2 - Towards commercialization and applications

Chair: Narges Yaghoobi Nia

11:40 - 12:10 Yulia Galagan (*TNO, Eindhoven, the Netherlands*)

applications-I1 Synergizing Sunlight Harvesting: Advancements in Electric and Thermal Energy Technologies

12:10 - 12:25 ANNALISA BRUNO (*School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, 637371 Singapore*)

applications-IS1 Unlocking Potential: Thermal Evaporation for Quantum Confinement in Perovskite Films

12:25 - 12:40 Juliane Borchert (*Fraunhofer Institute for Solar Energy Systems, Freiburg, 79110, Germany.*)

applications-IS2 Hybrid Deposition - a Route Towards the Scaling of Perovskite-Silicon Tandem Solar Cells

12:40 - 12:55 Joseph Luther (*National Renewable Energy Laboratory, NREL, Golden, CO, USA.*)

applications-IS3 Metal Halide Perovskite Photovoltaics for Electricity in Space

12:55 - 13:10 Henk Bolink (*Instituto de Ciencia Molecular, ICMol, Universidad de Valencia*)

applications-IS4 Vacuum Deposited Perovskite Solar Cells, Benefits and Challenges.

Session 2B3 - Emerging materials

Chair: Eline Hutter

11:40 - 12:10 Paulina Plochocka (*Laboratoire National des Champs Magnétiques Intenses, CNRS*)

materials-I1 Organic Inorganic Halide Perovskite: Exciting Playground for Exciton and Polaron Studies

12:10 - 12:25 Ji-Youn Seo (*Department of Nano Fusion Technology, Pusan National University, Busan, Korea*)

materials-IS1 Controlled growth of hybrid halide perovskites by molecular engineering

12:25 - 12:40 Amita Ummadisingu (*Chemical Engineering, University College London*)

materials-IS2 Anomalous charge transport in lead halide perovskite field-effect transistors and mitigation using 3D/2D heterostructures

12:40 - 12:55 James W. Ryan (*Department of Chemistry, Swansea University Singleton Park, Swansea SA2 8PP*), Aaron Cookson

materials-IS3 Squaraine-Based Memristors and Their Neuromorphic Capabilities

12:55 - 13:10 Filip Podjaski (*Department of Chemistry, Imperial College London, UK*)

materials-IS4 Organic based semiconductors in ionic environments

Session 2B4 - HOPV Rising Stars: Organic & Hybrid Photovoltaics

Chair: Bruno Ehrler

11:40 - 11:55 Bruno Ehrler (*AMOLF and University of Groningen*)

Photovoltaics-O1 HOPV Rising Stars: Chair introduction - Bruno Ehrler

11:55 - 12:10 Sofia Masi (*Institute of Advanced Materials (INAM), Universitat Jaume I, Av. De Vicent Sos Baynat, s/n 12071 Castellò, Spain*)

Photovoltaics-O2 Transparent Electrodes for High Perovskite Solar Cells Light Utilization Efficiency

12:10 - 12:25 Roja Singh (*Institute of Microstructure Technology (IMT), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344*Photovoltaics-O3 *Eggenstein-Leopoldshafen, Germany.*), Hang Hu, Thomas Feeney, Alexander Diercks, Felix Laufer, Yang Li, The Duong, Fabian Schackmar,

Bahram A. Nejand, Ulrich W. Paetzold

Impact of materials stoichiometry and surface morphology on stability of perovskite solar cells

12:25 - 12:40 Paramvir Ahlawat (*Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, CB2 1EW, Cambridge, UK*)

Photovoltaics-O4 Molecular details of heterogeneous nucleation and buried interface in metal halide perovskites

12:40 - 12:55 Manjunatha Reddy G.N. (*University of Lille, CNRS, Centrale Lille Institut, Univ. Artois, UMR 8181-UCCS laboratory, F 59000, Lille, France*)

Photovoltaics-O5 Empowering atomic-scale characterization to identify efficiency-durability relationships in organic and hybrid photovoltaics



12:55 - 13:10 Photovoltaics-06	Benjamin Gallant (<i>Department of Physics, University of Oxford, Clarendon Laboratory, Parks Road, OX1 3PU, United Kingdom</i>), Philippe Holzhey, Joel Smith, Saqlain Choudhary, Karim Elmostekawy, Henry Snaith From 2D to 3D: A green solvent system for templated sequential deposition of efficient and stable formamidinium lead triiodide
13:10 - 15:30	Lunch Break
	Session 2C1 - Advanced characterization and automation Chair: Wiebke Albrecht
15:30 - 15:45 automation-IS1	Erik Garnett (<i>Center for Nanophotonics, AMOLF, Science Park 104, 1098 XG Amsterdam, The Netherlands</i>) Perovskite Plasticity: Exploiting Instability for Self-Optimized Performance
15:45 - 16:00 automation-O1	Robert Hlavac (<i>Institute of Physics of the Czech Academy of Sciences, Cukrovarnická 10, 16200 Prague, Czech Republic.</i>), Ales Vlk, Zdenek Remes, Lucie Landova, Katarina Pekarkova, Antonin Fejfar, Martin Ledinsky Localization of defects in halide perovskites using photothermal deflection spectroscopy
16:00 - 16:15 automation-O2	Mirella Al Katrib (<i>IPVF, Institut Photovoltaïque d'Ile-de-France, 18 Boulevard Thomas Gobert, 91120 Palaiseau, France</i>), Pia Dally, Muriel Bouttemy Advanced Characterization of Perovskite Solar Devices at Buried Interfaces: Innovative Methodology by coupling GD-OES with XPS In-depth Profiling
16:15 - 16:30 automation-O3	Birgit Kammlander (<i>Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden</i>), Alberto García-Fernandez, Håkan Rensmo, Ute B. Cappel Investigating electron and ion dynamics of lead halide perovskite single crystals via time-resolved photoelectron spectroscopy
16:30 - 16:45 automation-O4	Ahmed M. El-Zohry (<i>Ultrafast Laser Dynamics Lab, Center for Integrative Petroleum Research, King Fahd University of Petroleum & Minerals, Dhahran 31261, KSA</i>) Semiconductor Photogenerated Charges via Femtosecond Mid-Infrared Laser Pulses
16:45 - 17:00 automation-O5	Manuel Kober-Czerny (<i>Department of Physics, University of Oxford, UK</i>), Akash Dasgupta, Seongrok Seo, Heon Jin, Henry Snaith All-Optical Assessment of Perovskite Thin-Films and Half-Stacks by Coupling Time-Resolved PL with Bayesian Inference
17:00 - 17:15 automation-O6	Imme Schuringa (<i>Light Management for Photovoltaics, AMOLF, Netherlands</i>), Saskia Fiedler, Bruno Ehrler Correlating Optical and Structural Properties of Halide Perovskite Thin Films at the Nanoscale
	Session 2C2 - Towards commercialization and applications Chair: Narges Yaghoobi Nia
15:30 - 15:45 applications-IS1	Daniel Ramirez (<i>Centro de Investigación, Innovación y Desarrollo de Materiales—CIDEMAT, Universidad de Antioquia, Medellín, Colombia.</i>) Full solution-processed Perovskite solar cells
15:45 - 16:00 applications-O1	Andrés Soto (<i>LEPABE - Laboratory for Process Engineering, Environment, Biotechnology and Energy, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal.</i>), Vera Duarte, Adélio Mendes, Luísa Andrade Boosting Efficiency and Active Area in Inverted Perovskite Modules: Optimization of Geometric Fill Factor using Laser Ablation
16:00 - 16:15 applications-O2	Helge Eggers (<i>Light Technology Institute (LTI) at Karlsruhe Institute of Technology (KIT), Karlsruhe, Engesserstr. 13, 76131, Germany</i>), Pesch Raphael, Sutter Johannes, Ulrich W. Paetzold Green Solvents Used in Optimized (Hybrid) Inkjet Printing for Scalable Fabrication of Highly Efficient (>18%) Perovskite Solar Cells
16:15 - 16:30 applications-O3	Dimitris Chalkias (<i>Nanotechnology & Advanced Materials Laboratory, Department of Electrical and Computer Engineering, University of the Peloponnese, GR26334 Patras, Greece</i>), Archontoula Nikolakopoulou, Lykourgos Kontaxis, Elias Stathatos Development of 20%-efficient and mechanically robust ambient-air-processed carbon-based flexible perovskite solar cells using green and benign-to-plastics antisolvent quenching
16:30 - 16:45 applications-O4	Jesus Sanchez-Diaz (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, Av. De Vicent Sos Baynat, s/n 12071 Castellò, Spain</i>), Felipe A. Vinocour Pacheco, Wiktor Zuraw, Senol Oz, Ivan Mora Sero Upscalable and flexible Tin-Based Perovskites solar cells and minimodules by Blade-coating technic
16:45 - 17:00 applications-O5	Alexander Diercks (<i>Light Technology Institute (LTI) at Karlsruhe Institute of Technology (KIT), Karlsruhe, Engesserstr. 13, 76131, Germany</i>), Julian Petry, Thomas Feeney, Roja Singh, Ulrich W. Paetzold, Paul Fassel Understanding Substrate-Dependent Growth of Sequentially Evaporated Perovskite Thin Films
17:00 - 17:15 applications-O6	Dilara Öz (<i>University of Cologne, Institute for Physical Chemistry</i>), Dr. Selina Olthof Do substrates matter? - the impact of hole transport layers on Iodide/Bromide composition in thermally evaporated mixed halide perovskites
	Session 2C3 - Emerging materials Chair: Eline Hutter
15:30 - 15:45 materials-IS1	Sascha Feldmann (<i>Rowland Institute, Harvard University, US</i>) Tracking charge & spin in time and space in halide perovskites
15:45 - 16:00 materials-O1	Vera La Ferrara (<i>ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development</i>), Antonella De Maria, Gabriella Rametta Green Anisole as Antisolvent in Planar Triple-Cation Perovskite Solar Cells with Varying Cesium Concentrations
16:00 - 16:15 materials-O2	Anna Capitaine (<i>Institut Photovoltaïque d'Ile-de-France (IPVF)</i>) Enhanced efficiency and stability for perovskite inverted architecture based on quasi-2D perovskite passivation
16:15 - 16:30 materials-O3	Angshuman Nag, Parikshit Kumar Rajput (<i>Department of Chemistry, Indian Institute of Science Education and Research (IISER), Pune 411008, India</i>), Parshurama Shalunke, Manmayuri Sharma Melt Processable 2D Hybrid Lead Halide Perovskites
16:30 - 16:45 materials-O4	Oscar Zacharias Telschow (<i>Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden (IFW), Helmholtzstraße 20, 01069, Dresden, Germany.</i>), Angelika Wrzesińska-Lashkova, Shivam Singh, Jianan Li, Bernd Plietker, Yana Vaynzof Enhancing Moisture Stability in Perovskite Solar Cells through Dual Interfacial Modification
16:45 - 17:00 materials-O5	Victoria Ozerova (<i>Federal Research Center for Problems of Chemical Physics and Medicinal Chemistry of the Russian Academy of Sciences, Chernogolovka, Russia</i>), Nikita Emelianov, Lyubov Frolova, Pavel Troshin Rational design of molecular modifiers for enhancing the intrinsic photochemical stability of complex lead halide perovskites
17:00 - 17:15 materials-O6	Valerio Stacchini (<i>HySPRINT Innovation Lab, Department Solution-Processing of Hybrid Materials and Devices, Helmholtz Zentrum Berlin, Berlin, Germany.</i>) Challenges and Breakthroughs with Novel Electron Selective Monolayers in Perovskite Solar Cells

**Session 2C4 - Organic & Hybrid Photovoltaics**

Chair: Manjunatha Reddy GN

15:30 - 15:45 Photovoltaics-IS1	Matteo Bonomo, Gabriele Viada, Davide Gallo, Ana Yancy Segura Zarate, Simone Galliano, Giulio Kock, Luca Bonandini, Nadia Barbero, Alberto Menozzi, Pauline Chotard, Franck Barath, Francesca De Rossi, Fabio Matteocci, Frederic Sauvage, Aldo Di Carlo, Francesca Brunetti, <u>Claudia Barolo</u> (<i>Univ Torino, NIS Interdept, Dept Chem, I-10125 Turin, Italy, Univ Torino, INSTM Reference Ctr, I-10125 Turin, Italy</i>) Sustainable Thermosetting Polyurethane Resins as interlayers and primary Encapsulants in emerging photovoltaics
15:45 - 16:00 Photovoltaics-O1	<u>Gregor Trimmel</u> (<i>Institute for Chemistry and Technology of Materials (ICTM), NAWI Graz, Graz University of Technology, Stremayrgasse 9, 8010 Graz, Austria</i>), Robert Saf, Elena Zuccala, Karin Bartl, Thomas Rath Investigations of Impurities and Degradation Products in Organic Solar Cells
16:00 - 16:15 Photovoltaics-O2	<u>Julia Hönigsberger</u> (<i>Institute for Chemistry and Technology of Materials (ICTM), NAWI Graz, Graz University of Technology, Stremayrgasse 9, 8010 Graz, Austria</i>), Barbara Muhry, Bettina Schlemmer, Thomas Rath, Gregor Trimmel Side Chain Engineering of a Non-Fused Ring Electron Acceptor for Improved Thermal and Photo-Stability
16:15 - 16:30 Photovoltaics-O3	<u>Eunchi Kim</u> (<i>Forschungszentrum Jülich, IEK-5 Photovoltaik, Jülich, North Rhine-Westphalia, Germany</i>), Thomas Kirchartz Limits to the Superposition Principle and Importance of Photoshunt in Organic Solar Cells
16:30 - 16:45 Photovoltaics-O4	<u>Abdel-aziz wayzani</u> (<i>Laboratoire de Chimie Moléculaire et Thio-organique, ENSICAEN, Université Caen-Normandie, UMR CNRS 6507 & FR 3038, 6 boulevard Maréchal Juin, 14050 Caen, France.</i>), Loïc Le Pluart, Cyprien Lemouchi, Ganesh Sharma, Pierre Harvey LOW BANDGAP METALLOOLIGOMER FOR ORGANIC SOLAR CELLS
16:45 - 17:00 Photovoltaics-O5	<u>Han Xu</u> (<i>KAUST: King Abdullah University of Science and Technology</i>), Jianhua Han, Derya Baran Understanding the Structure-Stability Relationship of Photovoltaic Materials for Outdoor Stable Organic Solar Cells
17:00 - 17:15 Photovoltaics-O6	<u>Sreelakshmi Chandrabose</u> (<i>CEA-Paris Saclay</i>), Ana M Valencia, Nisreen Alshehri, Frederic Laquai, Caterina Cocchi, Dieter Neher Mitigating Triplet Loss in 2D-WSe ₂ /Non-fullerene Heterostructures Using Halogenated Acceptors

Special Session: Energy Policy and Diplomacy

Chair: Bruno Ehrler

17:15 - 17:30 Diplomacy-I1	<u>Jao van de Lagemaat</u> (<i>National Renewable Energy Laboratory, NREL, Golden, CO, USA.</i>), Billy J. Stanbery, Michael Woodhouse Sustainable Manufacturing Pathways to Terawatt-scale Photovoltaic Deployment: The Role of New Technologies and Circular Economy
17:30 - 17:45 Diplomacy-I2	<u>Marc Rechter</u> (<i>H.M. Rechter</i>) Current State of Affairs EU PV Manufacturing
17:45 - 18:15	Panel discussion
20:30 - 22:00	Social Dinner

**May 15th - Day 4 (Wednesday) 4**

08:40 - 08:50	Announcement of the day
08:50 - 09:00	Chair opening - Hybrid photovoltaics (HPV)
	Session 3A - Hybrid photovoltaics (HPV) Chair: Loreta Muscarella
09:00 - 09:40 (HPV)-K1	<u>Annamaria Petrozza</u> (<i>Istituto di Italiano Tecnologia</i>) Defects Activity in Metal Halide Perovskites
09:40 - 10:10 (HPV)-I1	<u>Ursula Roethlisberger</u> (<i>Ecole Polytechnique Fédérale de Lausanne (EPFL)</i>) Computational Insights into the Multifaceted Role of Additives in Perovskite Solar Cells
10:10 - 10:15	Industry talk
10:15 - 10:45 (HPV)-I2	<u>Christoph Brabec</u> (<i>Institute of Materials for Electronics and Energy Technology (i-MEET), Department of Materials Science and Engineering, FAU, Martensstrasse 7, 91058 Erlangen, Germany</i>) Discovering molecules and processed with optimized performance for emerging PV Technologies
10:45 - 11:30	Coffee Break
	Session 3B1 - Device physics and engineering Chair: Jarla Thiesbrummel
11:40 - 12:10 engineering-I1	<u>Maria A. Loi</u> (<i>Zernike Institute for Advanced Materials, University of Groningen, Netherlands</i>) In-situ SnSe deposition as passivation for scalable and stable quasi-2D lead-tin perovskite solar cells
12:10 - 12:25 engineering-IS1	<u>Ute Cappel</u> (<i>Condensed Matter Physics of Energy Materials, Division of X-ray Photon Science, Department of Physics and Astronomy, Uppsala University</i>) Insight into the physics of perovskite solar cells from photoelectron spectroscopy
12:25 - 12:40 engineering-IS2	Frédéric Laquai, <u>Christopher Petoukhoff</u> (<i>King Abdullah University of Science and Technology (KAUST), KAUST Solar Center, Thuwal 23955-6900, Saudi Arabia</i>) Interfacial Charge Carrier Recombination Processes in Metal Halide Perovskite Solar Cells
12:40 - 12:55 engineering-IS3	<u>Michael Saliba</u> (<i>Institute for Photovoltaics (ipv), University of Stuttgart</i>) Shedding Light on Wide Bandgap Perovskites
12:55 - 13:10 engineering-IS4	<u>Thomas Kirchartz</u> (<i>IEK5-Photovoltaik, Forschungszentrum Jülich GmbH, 52425 Jülich, Germany</i>) Consequences of power-law photoluminescence decays in halide perovskite films
	Session 3B2 - Emerging concepts Chair: Francesca Brunetti
11:40 - 12:10 concepts-I1	<u>Hui-Seon Kim</u> (<i>Inha University</i>) Engineered lattice strain for perovskite solar cells
12:10 - 12:25 concepts-IS1	<u>Lethy Krishnan Jagadamma</u> (<i>Energy Harvesting Research Group, SUPA, School of Physics and Astronomy, University of St Andrews</i>), Shaoyang Wang, Sam Miller, Tim Kodalle, Carolin Sutter-Fella Halide Perovskites Based Indoor Photovoltaics: Role of Interfacial Layers
12:25 - 12:40 concepts-IS2	<u>Diego Solis-Ibarra</u> (<i>Instituto de Investigaciones en Materiales, UNAM, Mexico City, Mexico</i>) Introducing Non-Innocent Organic Molecules into Hybrid Perovskites for Enhanced Functionality
12:40 - 12:55 concepts-IS3	<u>Filippo De Angelis</u> (<i>Department of Chemistry, Biology and Biotechnology and INSTM, University of Perugia, Via Elce di Sotto 8, I-06123, Perugia, Italy</i>) Controlling Doping and Defect Activity Towards Photostable Tin-Halide Perovskites
12:55 - 13:10 concepts-IS4	<u>Renaud DEMADRILLE</u> (<i>Grenoble Alpes University, CNRS, CEA, INP, IRIG/SYMMES, F38000 Grenoble, France</i>), Samuel FAUVEL, Johan LIOTIER, José-Maria ANDRES CASTAN, Antonio J. RIQUELME, Valid M. MWALUKUKU, Stéphanie NARBEY, Pascale MALDIVI, Juan ANTA Push-pull photochromic dyes for use in semitransparent solar cells with dynamic optical properties.
	Session 3B3 - Hybrid Session: Hybrid Photovoltaics
11:40 - 12:10 Photovoltaics-I1	<u>Anita Ho-Baillie</u> (<i>School of Photovoltaic and Renewable Energy Engineering, The University of Sydney</i>) Perovskite tandem solar cells and the role of diffusions.
12:10 - 12:25 Photovoltaics-O1	<u>APOORVA SINGH</u> (<i>Department of Materials Engineering, Indian Institute of Science, Bengaluru, 560012, Karnataka, India</i>), Praveen C Ramamurthy Modifications in Perovskite Solar Cells to Explore Performance Enhancement, Stability and Anomalous Effects
12:25 - 12:40 Photovoltaics-O2	<u>Aleš Vlk</u> (<i>Institute of Physics of the Czech Academy of Sciences, Cukrovarnická 10, 16200 Prague, Czech Republic.</i>), Robert Hlaváč, Lucie Landová, Julius Vida, Tomáš Homola, Antonín Fejfar, Martin Ledinský Passivation of Bulk Defects in Halide Perovskites thin Films by Plasma Treatment
12:40 - 12:55 Photovoltaics-O3	<u>Romain Lavoipierre</u> (<i>LEPMI/GUIDE, Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, Grenoble INP</i>), Emilie Planès, Lionel Flandin, Lara Perrin Electrodeposition of perovskite for photovoltaic application: consequences of AVAL additive on electrodeposited MAPbI3
12:55 - 13:10 Photovoltaics-O4	<u>Jeffrey Christians</u> (<i>Department of Engineering, Hope College, Holland, MI, USA</i>), Josephine Surel, Elizabeth Cutlip, James Mandeville Photovoltaic Windows and Chromogenic Perovskites
	Session 3B4 - HOPV Industry Talks Chair: Andrés Eloy Redondo Soto
11:40 - 11:55 Talks-O4	<u>Andrés Soto</u> (<i>University of Porto, LEPABE - Laboratory for Process Engineering, Environment, Biotechnology and Energy, Portugal</i>) HOPV Industry Talks - Chair introduction - Andrés Soto
11:55 - 12:10 Talks-O5	<u>Alessandro Mezzetti</u> (<i>European Commission, Joint Research Centre (JRC)</i>), Valentina Larini, Laura Ciammaruchi, Ewan Dunlop, Giulia Grancini, Giacomo Ceccone Acetone as an inexpensive, green solvent for perovskite solar cell recycling
12:10 - 12:25 Talks-O6	<u>Elias Peraticos</u> (<i>FOSS Research Centre for Sustainable Energy, Department of Electrical and Computer Engineering, University of Cyprus, 75 Kallipoleos Str., Nicosia, 1678, Cyprus</i>), Vasiliki Paraskeva, Matthew Norton, Aranzazu Aguirre, Anurag Krishna, Tom Aernouts, Maria Hadjipanayi Evolution of Hysteresis Index Based on 2-year Outdoor Testing



12:25 - 12:40 Talks-O1	<u>Sevdiye Basak Turgut</u> (<i>Ege University Solar Energy Institute</i>), Burak Kahraman, Ahmet Yilanci, Ceylan Zafer, Burak Gultekin Optimizing performance of perovskite solar cell: A Comparative Study of Bayesian Optimization and Experimental Testing for Transport Layer Thickness Determination
12:40 - 12:55 Talks-O2	<u>Oliver Salomon</u> (<i>Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW) Stuttgart, Germany</i>), Roland Würz, Tina Wahl, Jonas Hanisch Towards a roll-to-roll production of perovskite solar cells with slot die coating using green solvents.
12:55 - 13:10 Talks-O3	<u>Estelle Carriu</u> (<i>IPVF, Institut Photovoltaïque d'Ile-de-France, 18 Boulevard Thomas Gobert, 91120 Palaiseau, France</i>), Marion Provost, Thomas Guillemot, Javid Hajhemati, Philip Schulz, Jean Rousset Large-Scale Solution Process of Self-Assembled Monolayers as Passivation Layer for Inverted Perovskite Solar Cells
13:10 - 15:30	Lunch Break
Session 3C1 - Device physics and engineering Chair: Jarla Thiesbrummel	
15:30 - 16:00 engineering-IS1	<u>Juan-Pablo Correa-Baena</u> (<i>School of Materials Science and Engineering Georgia Institute of Technology Atlanta, GA 30332, USA</i>) Structural Phase Transformations in Halide Perovskites
16:00 - 16:15 engineering-O1	<u>Sergio Galve-Lahoz</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, Av. De Vicent Sos Baynat, s/n 12071 Castelló, Spain</i>), Jesus Sanchez-Diaz, Juan Luis Delgado, Iván Mora-Seró, Jorge Marco Enhancing Tin Perovskite Solar Cells Performance through Innovative Fullerene Derivatives for Minimized Interfacial Voc Losses
16:15 - 16:30 engineering-O2	<u>Kousumi Mukherjee</u> (<i>Department of Applied Physics, Eindhoven University of Technology, partner in Solliance, P.O. Box 513, 5600 MB Eindhoven, The Netherlands</i>), Denise Kreugel, Nga Phung, Cristian van Helvoirt, Valerio Zardetto, Mariadriana Creatore On the VOC Loss in NiO-based Inverted Metal Halide Perovskite Solar Cells
16:30 - 16:45 engineering-O3	<u>Chris Dreesen</u> (<i>IEK-5 Photovoltaik, Forschungszentrum Jülich GmbH, Germany</i>), Yuan Ye, Genghua Yan, Toby Rudolph, Markus Hülsbeck, Benjamin Klingebiel, Jiajiu Ye, Uwe Rau, Thomas Kirchartz How Shallow Traps Lead to Long and Variable Charge Carrier Decay Times in Lead Halide Perovskites
16:45 - 17:00 engineering-O4	<u>Sarah Gillespie</u> (<i>AMOLF Institute, Science Park 104, Amsterdam, 1098XG The Netherlands</i>), Jerome Gautier, Julia van der Burgt, John Anker, Bart Geerligs, Gianluca Coletti, Erik Garnett Silicon-Inspired Analysis of Interfacial Recombination in Perovskite Photovoltaics
17:00 - 17:15 engineering-O5	<u>Sander Heester</u> (<i>Zernike Institute for Advanced Materials, University of Groningen, The Netherlands</i>), Federico Ventosinos, Lidón Gil-Escrig, Henk Bolink, Jan Anton Koster Explaining the drop in open-circuit voltage of co-evaporated FACsPbBrCl perovskites with increased chloride content using drift-diffusion simulations
Session 3C2 - Emerging concepts Chair: Francesca Brunetti	
15:30 - 15:45 concepts-IS1	<u>Konstantinos Rogdakis</u> (<i>Department of Electrical Computer Engineering, Hellenic Mediterranean University (HMU), Heraklion 71410, Crete, Greece</i>), Michalis Loizos, Weifan Luo, Patricia A Gaina, Jovana V. Milić, Emmanuel Kymakis Memristive perovskite solar cells for self-powered IoT edge computing
15:45 - 16:00 concepts-O6	<u>Antonio J. Riquelme</u> (<i>Univ. Grenoble Alpes, CEA, CNRS, IRIG-SyMMES, 17 rue des Martyrs, 38000 Grenoble, France</i>), Valid M. Mwalukuku, Samuel Fauvel, Johan Liotier, Yann Kervella, Quentin Huault, Alix Haurez, José-María Andrés-Castán, Stéphanie Narbey, Juan A. Anta, Renaud Demadrille Insights from Optoelectronic Small Perturbation Techniques on Photovoltaic Process in Photochromic Dye-Sensitized Solar Cells
16:00 - 16:15 concepts-O1	<u>Ya-Ru Wang</u> (<i>Max Planck Institute for Solid State Research, Stuttgart, Germany.</i>), Marko Mladenović, Rothlisberger Ursula, Milić Jovana V., Moia Davide, Grätzel Michael, Maier Joachim Photo De-Mixing in Mixed Bromide-Iodide Perovskites: Dimensionality and Encapsulation Effects on Ionic & Electronic Transport Properties
16:15 - 16:30 concepts-O2	Hye-Ji Bae, <u>Tae-Youl Yang</u> (<i>Chungnam National University</i>) Interlayer Distance Dictates Ion Transport and Degradation in 2D Perovskites for Optoelectronic Applications
16:30 - 16:45 concepts-O3	<u>Milos Dubajic</u> (<i>Department of Chemical Engineering and Biotechnology, University of Cambridge, Cambridge CB3 0AS, U.K.</i>), Sam Stranks, Aron Walsh, James Neilson A-site cation dictates local octahedral tilting and ferroelasticity in lead halide perovskites
16:45 - 17:00 concepts-O4	<u>Esther Yi-Hang Hung</u> (<i>Department of Physics, University of Oxford, UK</i>), Harry Sansom, Henry Snaith A novel, lead-free halide perovskite derivative for ferro- and piezo-electric applications
17:00 - 17:15 concepts-O5	<u>Agustin O. Alvarez</u> (<i>Center for Nanophotonics, AMOLF, Science Park 104, 1098 XG Amsterdam, The Netherlands</i>), Jeroen de Boer, Bruno Ehrler Insights into the Operational Mechanisms of Halide Perovskite Memristors
Session 3C3 - Hybrid Session: Hybrid Photovoltaics Chair: Imme Schuringa	
15:30 - 15:45 Photovoltaics-IS1	<u>Carolin Sutter-Fella</u> (<i>Molecular Foundry, Lawrence Berkeley National Laboratory, 1 Cyclotron Road, Berkeley, 94720 California, USA</i>) 2D passivation of 3D halide perovskite films: What is moving at the 2D/3D interface ?
15:45 - 16:00 Photovoltaics-IS2	<u>David Cahen</u> (<i>Dept. of Molecular Chemistry and Materials Science, Weizmann Institute of Science, Rehovot, 7610015, Israel</i>), Antoine Kahn Surface and Interface Defects can Control Bulk Doping in Polycrystalline Pb-Halide Perovskites
16:00 - 16:15 Photovoltaics-O1	<u>Abhishek Raj</u> (<i>CSIR-National Environmental Engineering Research Institute (NEERI), Nagpur-440020, India</i>), Manish Kumar, Avneesh Anshul Strategically grown Cs ₂ AgBiBr ₆ double perovskite material for lead-free all inorganic perovskite solar cells
16:15 - 16:30 Photovoltaics-O2	<u>Kezia Sasitharan</u> (<i>Newcastle University, Newcastle upon Tyne, NE1 7RU, United Kingdom.</i>), Marina Freitag Metal-Organic Nanosheets for Synchronous Harvest and Storage of Solar Energy
16:30 - 16:45 Photovoltaics-O3	<u>Povilas Luizys</u> (<i>Department of Organic Chemistry, Kaunas University of Technology, Kaunas, Lithuania</i>), Jianxing Xia, Maryte Daskeviciene, Vygtintas Jankauskas, Kasparas Rakstys, Vytautas Getautis, Mohammad Khaja Nazeeruddin Flexible Hole-Transporting Materials With N-Carbazolyl-Based Chromophores Linked Via Aliphatic Chain For Perovskite Solar Cells
16:45 - 17:00	
17:00 - 17:15 Photovoltaics-O4	<u>Philippe Holzhey</u> (<i>Adolphe Merkle Institute, University of Fribourg, 1700 Fribourg, Switzerland</i>), Michael Prettl, Silvia Collavini, Nathan Chang, Michael Saliba Towards commercialisation with lightweight, flexible perovskite solar cells for residential photovoltaics

15:30 - 17:15	Session 3C4 - Networking space: innovative perspectives for HOPV
17:15 - 18:00	Special Session: Raising the New Generation of HOPV Scientists
18:00 - 18:15	Closing



Poster Contribution

014	<u>adem mutlu</u> (<i>ege university solar energy institute</i>), sevdije başak turgut, alper ekici, burak gültekin, ceylan zafer Solvent engineering of hole transport layer for improved efficiency and stability in perovskite solar cells
018	<u>Daphne M. Dekker</u> (<i>Light Management in New Photovoltaic Materials (LMPV), AMOLF, Amsterdam, The Netherlands</i>), Moritz C. Schmidt, Agustin O. Alvarez, Bruno Ehrler Comparison of PEDOT:PSS and 2PACz as Hole Transport Layers for Lead-Tin Perovskite Solar Cells
029	<u>Fatou Diaw-Ndiaye</u> (<i>Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, Grenoble INP, LEPMI, 38000 Grenoble, France</i>), Emilie Planes, María Bernechea, Lara Perrin, Lionel Flandin Development of solar cells combining perovskite and quantum dots
030	Eleftherios Christopoulos, <u>Nagia S. Tayara</u> (<i>Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 11635 Athens, Greece</i>), Polycarpos Falaras, Nektarios Nasikas, Andreas Kaltzoglou A Feasibility Study of Perovskite Solar Cells under Peltier Cooling
031	<u>Jeroen de Boer</u> (<i>AMOLF, Amsterdam, Netherlands</i>), Bruno Ehrler Lead halide perovskites for low-energy consumption neuromorphic applications
097	<u>Stefania Riva</u> (<i>Condensed Matter Physics of Energy Materials, Division of X-ray Photon Science, Department of Physics and Astronomy, Uppsala University</i>), Soham Mukherjee, Corrado Comparotto, Sergei M. Butorin, Mahmoud Abdel-Hafiez, Jonathan Scragg, Håkan Rensmo, Garima Aggarwal, Abdel Rahman Allan, Evelyn Johannesson, Fredrik O.L. Johansson, Gabriel J. Man, Dibya Phuyal, Konstantin A. Simonov, Justus Just, Konstantin Klementiev Exploring growth mechanism, material chemistry, and electronic structure of chalcogenide perovskite BaZrS ₃
121	<u>Muhammad Azhar Ansari</u> (<i>Department of Architecture and Industrial Design, University of Campania Luigi Vanvitelli, Italy</i>), Giovanni Ciampi, Sergio Sibilio Architectural Alchemy: Transforming Buildings into Energy Producers through Photovoltaics
134	<u>Mehmet Cem Sahiner</u> (<i>Department of Electrical and Electronics Engineering, Middle East Technical University</i>), Amir Zarean Afshord, Zeynep Gozukara Karabag, Gorkem Gunbas, Selcuk Yerci Insights Into the Recombination Dynamics of Perovskite Solar Cells via Voltage and Photon Flux Dependence of High-Frequency Impedance Response
172	<u>Karen Radetzky</u> (<i>Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden</i>), Alberto Garcia Fernandez, Birgit Kammlander, Evelyn Johannesson, Rahul Varma, Håkan Rensmo, Ute Cappel In situ study of a single crystal model system for inverted perovskite solar cells
176	<u>Nada Mrkyvkova</u> (<i>Center for Advanced Materials Application, Slovak Academy of Sciences, Dúbravská cesta 9, 845 11 Bratislava, Slovakia</i>), Vladimír Held, Peter Nadazdy, Karol Vegso, Quentin Guesnay, Daming Zheng, Frank Schreiber, Peter Siffalovic In situ Study of Perovskite Thin Film Growth
178	<u>Zhongjin Shen</u> (<i>School of Natural and Environmental Sciences, Newcastle University, United Kingdom NE1 7RU</i>) Molecular Engineering of Low-Cost, Efficient and Stable Photosensitizers for Dye-Sensitized Solar Cells
179	<u>Gabriela Lewinska</u> (<i>AGH University of Krakow, Institute of Electronics, 30 Mickiewicza Ave, 30-059 Krakow, Poland</i>), Katarzyna Ungeheuer, Jerzy Sanetra, Konstanty Marszałek Cuprous oxide thin films as a supporting layer in binary and ternary organic cells
180	Hryhorii P. Parkhomenko, <u>Askhat N. Jumabekov</u> (<i>Department of Physics, School of Sciences and Humanities, Nazarbayev University, Astana 010000, Republic of Kazakhstan</i>) Back-contact perovskite light-emitting diodes
181	<u>Elias Stathatos</u> (<i>Nanotechnology & Advanced Materials Laboratory, Department of Electrical and Computer Engineering, University of the Peloponnese, GR26334 Patras, Greece</i>), Dimitris Chalkias, Archontoula Nikolakopoulou, Argyroula Mourtzikou Optical amendment of blue semi-transparent photovoltaic glass panes using a Eu ³⁺ -based down-conversion phosphor for enhanced UV-light protection and power conversion efficiency
182	<u>Yan Wang</u> (<i>Department of Chemistry, City University of Hong Kong, Hong Kong SAR, P. R. China</i>), Zonglong Zhu Efficient and Stable Perovskite/Organic Tandem Solar Cells through an All-Polymer Mixture
183	<u>Hryhorii Parkhomenko</u> (<i>Department of Physics, School of Sciences and Humanities, Nazarbayev University, Astana 010000, Republic of Kazakhstan</i>), Mykhailo Solovan, Sanjay Sahare, Andrii Mostovyi, Damir Aidarkhanov, Nora Schopp, Taras Kovaliuk, Marat Kaikanov, Annie Ng, Viktor Brus Impact of a Short-Pulse High-Intense Proton Irradiation on High-Performance Perovskite Solar Cells
185	<u>Andrii Mostovyi</u> (<i>Department of Physics, School of Sciences and Humanities, Nazarbayev University, Astana 010000, Republic of Kazakhstan</i>), Hryhorii Parkhomenko, Nora Schopp, Mykhailo Solovan, Viktor Brus Organic Solar Cells with Highly Transparent Ternary Bulk-Heterojunctions
186	<u>Fiona McPartlan</u> (<i>AMOLF, Amsterdam, Netherlands</i>), Daphne Dekker, Bruno Ehrler A study of the role of interfaces in degradation of lead-tin perovskite solar cells
188	<u>Mykhailo Khytko</u> (<i>Institute of Physics of the Czech Academy of Sciences, Cukrovarnická 10, 16200 Prague, Czech Republic</i>), Swarnendu Banerjee, Matěj Hývl, Antonín Fejfar, Martin Ledinský AFM Studies of Perovskite Degradation: A Critical Assessment of Stability and Crystallographic Orientation
189	<u>Ghewa AlSabeh</u> (<i>Adolphe Merkle Institute, University of Fribourg, 1700 Fribourg, Switzerland</i>), Lukas Pfeifer, Ming Ren, Dominik Kubicki, Paul Zimmermann, Lena Merten, Alexander Hinderhofer, Frank Schreiber, Fabiola Faini, Giulia Grancini, Igor Moudrakovski, Davide Moia, Joachim Maier, Michael Grätzel, Jovana V. Milić Enhancing the Functionality of Layered Hybrid Perovskites
190	Ji-young Seo, Sun-Ju Kim, <u>Jong-Min Kim</u> (<i>Laboratory of Nano Energy Harvesting Materials and Devices, Department of Nano Engineering, Pusan National University, Pusan, Korea</i>) Controlled Growth of Hybrid Halide Perovskites by Crown Ether Complexation for Perovskite Solar Cells
191	<u>Maryam Choghhaei</u> (<i>University of Cologne</i>), Viren Tyagi, Shuxia Tao, Selina Olthof Systematic investigation of alkylammonium-based 2D Ruddlesden-Popper perovskites: the impact of varying chain length
192	<u>Manuela Ferrara</u> (<i>Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Portici Research Centre, Portici (NA), Italy</i>), Maria Federica Caso, Fausta Loffredo, Giuseppe Nasti, Corinna Ponti, Gennaro V. Sannino, Carmen Serpico, Fulvia Villani, Paola Delli Veneri, Lucia V. Mercaldo Co-evaporation and hybrid approaches for fabrication of MAPbI ₃ for perovskite solar cells
193	<u>Giovanni Spinelli</u> (<i>Newcastle University, Newcastle upon Tyne, NE1 7RU, United Kingdom</i>), Marina Fraitağ Conductivity in Thin-Films of Transition Metal coordination Complexes



194	James Martin (<i>BCMaterials, Basque Center for Materials, Applications and Nanostructures, UPV/EHU Science Park, 48940 Leioa, Spain</i>), Samrana Kazim, Shahzada Ahmad, Luis Lezama Synthesis and Opto-electrical properties of Transition metal alloyed Lead-free layered perovskite nanocrystals.
196	Thelma Serrano (<i>Universidad Autónoma de Nuevo León, Facultad de Ciencias Químicas, Laboratorio de Materiales I, Av. Pedro de Alba s/n, Ciudad Universitaria, C.P. 66455, San Nicolás de los Garza, Nuevo León, México</i>), Pedro Hernández, Fernanda Retana, Idalia Gómez Influence of Chemical Composition of FexZn1-xS on The Efficiency of Organic-Inorganic Hybrid Solar Cells
197	Bernadette Ortner (<i>Institute for Chemistry and Technology of Materials, NAWI Graz, TU Graz, 8010 Graz</i>), Georg Haberehner, Thomas Rath, Gregor Trimmel Strategies to improve the semitransparency of organic solar cells investigated on different donor/acceptor combinations
199	Moritz Schmidt (<i>AMOLF Institute, Science Park 104, Amsterdam, 1098XG The Netherlands</i>), Bruno Ehrler An updated approach to quantify ion migration in perovskite solar cells based on capacitance transients
200	Joaquín Valdez García (<i>Department of Mechanical and Materials Engineering, Faculty of Technology, University of Turku, FI-20500 Turku, Finland</i>), Joice Jaqueline Kaschuk, Yazan Al Haj, Aleksu Kampinen, Orlando J. Rojas, Tiffany Abitbol, Jaana Vapaavuori, Kati Miettunen Cellulose in Perovskite Solar Cells: from Substrates to Additives
202	Tamas Brigancz (<i>Semilab Co. Ltd, 2. Prielle K. str., Budapest, Hungary</i>), Zsombor Santa, Zoltan Kiss, Ferenc Korsos, Levente Illes, Ferenc Steinbach, Sándor Lenk, Alexandros Zachariadis, Christos Kapnopoulou, Vasileios Kyriazopoulos, Evangelos Mekeridis, Argiris Laskarakis, Stergios Logothetidis Photoluminescence characterization of organic photovoltaic structures
203	José Martínez, Fernanda Retana, Thelma Serrano, Idalia Gómez (<i>Universidad Autónoma de Nuevo León, Facultad de Ciencias Químicas, Laboratorio de Materiales I, Av. Pedro de Alba s/n, Ciudad Universitaria, C.P. 66455, San Nicolás de los Garza, Nuevo León, México</i>) Polythiophene (PT) and PT/GO thin films for potential application in solar cells
204	Alexander Ehm (<i>Institut für Physik, Technische Universität Chemnitz, 09126 Chemnitz, Germany</i>), Rukiya Matsidik, Michael Sommer, Dietrich R. T. Zahn Monitoring the Crystallisation Process of NDI-T2 Based Oligomers Using Spectroscopic Ellipsometry
205	Stefan Moscher (<i>Institute for Chemistry and Technology of Materials (ICTM), NAWI Graz, Graz University of Technology, Stremayrgasse 9, 8010 Graz, Austria</i>), Sebastian Mairinger, Lukas Troi, Fernando Warchomicka, Gregor Trimmel, Thomas Rath Lead-free Tin Halide Perovskite Solar Cells - Refinement of Perovskite Film Crystallization
209	Larissa van de Ven (<i>AMOLF Institute, Science Park 104, Amsterdam, 1098XG The Netherlands</i>), Daphne Antony, Maria Antonietta Loi, Bruno Ehrler Tin-lead Perovskites: Perfect Alloy or Nano-scale Tin-Lead Ratio Inhomogeneity
210	Dilek CIRAK (<i>Ege University Solar Energy Institute</i>), Burak Gültekin Improving the Stability of Perovskite Precursor Solution by Using Additives
211	Jaume-Adrià Alberola-Borràs (<i>Institute of Advanced Materials (INAM), Universitat Jaume I, Av. De Vicent Sos Baynat, s/n 12071 Castelló, Spain</i>), Sofia Masi, Rosario Vidal, Iván Mora-Seró Environmental Impacts of semi-Transparent Evaporation of Electrodes for Colourful Perovskite Solar Cells Obtained with Life Cycle Assessment
212	Thi Kim Cuc Mai (<i>Microelectronics Research Unit, Faculty of Information Technology & Electrical Engineering, P. O. Box 8000, FI-90014, University of Oulu, Finland</i>), Jaakko Palosaari, Jari Juuti, Janne Halme Optimization of Hole Transport Layer (HTL)-Free Carbon-Based Perovskite Solar Cells Fabricated in Ambient Conditions
213	Florine Rombach (<i>Department of Physics, University of Oxford, Clarendon Laboratory, Parks Road, Oxford, OX1 3PU, UK</i>), Luca Gregori, Anika Sidler, Jayne Whitworth, Stefan Zeiske, Heon Jin, Esther Hung, Silvia Motti, Pietro Caprioglio, Daniele Meggiolaro, Henry Snaith Impact of Metal Impurities on Recombination in Lead-Tin Perovskites
214	András Bojtór, Dávid Krisztián, Ferenc Korsós, Oki Gunawan, Gábor Paráda (<i>Semilab Co. Ltd, 2. Prielle K. str., Budapest, Hungary</i>) Wavelength dependent studies of Carrier Resolved Photo Hall measurements
215	Linde van de Ven (<i>Light Management for Photovoltaics, AMOLF, Netherlands</i>) Sn-based perovskite from a stable intermediate
216	Sepideh Khazraei (<i>Microelectronics Research Unit Faculty of Information Technology and Electrical Engineering University of Oulu- Finland</i>), Jari Hannu The impact of printable copper complex redox shuttle incorporating 2D hybrid Ti3C2 MXene to enhance quasi-solid-state dye-sensitized solar cells performance
217	Gulnur Akhtanova (<i>Department of Physics, School of Sciences and Humanities, Nazarbayev University, Astana 010000, Republic of Kazakhstan</i>), Hryhorii Parkhomenko, Joachim Vollbrecht, Andriy Mostovyi, Nora Schopp, Viktor Brus Surface Recombination in Organic Solar Cells: Intrinsic vs. Doped Active Layer
218	Lars Sonneveld (<i>AMOLF</i>), Nikolai Orlov, Eric Garnett, Bruno Ehrler Towards Characterization of Perovskite Crystals under Solar Cell Operating Conditions: SEM-EBSD Measurement Parameters and Protective Coatings
219	Robin Schot (<i>AMOLF Institute, Science Park 104, Amsterdam, 1098XG The Netherlands</i>), Tom Veecken, Oussama Er-Raji, Adrian Callies, Patricia Schulze, Albert Polman 3D Spatially Resolved PL Maps of Textured Perovskite-Silicon Tandem Cells
221	Oleksii Omelianovych (<i>Department of Chemical Engineering, Chungnam National University, Daejeon, South Korea</i>), Liudmila L. Larina, Ho-Suk Choi Enhancing Perovskite Solar Cells with TiN Nanoparticles: Structural, Morphological, and Optical Effects