

Online nanoGe Fall Meeting 20 (OnlineNFM20)

#PerNC20. Perovskite II - Colloidal Nanocrystals: Synthesis, Spectroscopy, Theory and Applications

2020 October 22nd - 23rd

Conference Chairs: Gabriele Raino, Maryna Bodnarchuk and Oleksandr Voznyy

Conference Program

October 22nd - Day 3 (Thursday)	
08:30 - 08:35	PerNC Opening nanoGe
	PerNC 1.1 Chair: Gabriele Raino
08:35 - 08:45 1.1-T1	<u>Pradeep KR</u> (<i>JNCASR Jawaharlal Nerhu Centre for Advanced Scientific Research, Jakkur</i>), Ranjani Viswanatha Vibrationally Assisted Delayed Fluorescence (VADF) in Perovskite Quantum Dots for Harvesting Delayed Fluorescence
08:45 - 08:55 1.1-T2	<u>Andrés Fabián Gualdrón</u> (<i>Universitat Jaume I, Institute of Advanced Materials (INAM) - Spain</i>), Jhonatan Rodríguez-Pereira, Eliseo Amado González, Jorge Enrique Rueda, Rogelio Ospina Ospina, Sofia Masi, Seog Joon Yoon, Juan Tirado, Franklin Jaramillo, Said Agouram, Vicente Muñoz-Sanjosé, Sixto Giménez, Iván Mora-Seró Photocatalytic activity of all-inorganic CsPbBr ₃ -xI _x mixed halide perovskites nanocrystals influenced by surface chemical states
08:55 - 09:05 1.1-T3	<u>Anna Vivani</u> (<i>University of Insubria, Department of Science and High Technology</i>), Federica Bertolotti, Georgian Nedelcu, Antonio Cervellino, Maksym Kovalenko, Norberto Masciocchi, Antonella Guagliardi Investigation of Highly Stable CsPbBr ₃ Nanoplatelets by Wide Angle X-ray Total Scattering Methods
09:05 - 09:15 1.1-T4	<u>Dmitry Baranov</u> (<i>Department of Nanochemistry, Istituto Italiano di Tecnologia, Italy</i>), Liberato Manna Miniature Light Emitters Based on Self-Assembled CsPb(BrxI1-x) ₃ Nanocrystals: Barriers and Opportunities
09:15 - 09:45	Discussion
09:45 - 09:50	PerNC Short Break
09:50 - 10:00	PerNC Session Introduction - Maryna Bodnarchuk
	PerNC 1.2 Chair: Maryna Bodnarchuk
10:00 - 10:20 1.2-I1	<u>Narayan Pradhan</u> (<i>Indian association for the cultivation of science</i>) Connecting Perovskite Nanocrystals
10:20 - 10:40 1.2-I2	<u>Liberato Manna</u> (<i>Department of Nanochemistry, Istituto Italiano di Tecnologia, Italy</i>) Halide Perovskite Nanocrystals: Synthesis, the Role of the Surface, Heterostructures
10:40 - 11:00	Discussion
11:00 - 13:00	PerNC Break
13:00 - 13:05	PerNC Introduction nanoGe
13:05 - 13:15	PerNC Session Introduction 1.3 - Oleksandr Voznyy
	PerNC 1.3 Chair: Oleksandr Voznyy
13:15 - 13:35 1.3-I1	<u>Al. L. Efros</u> (<i>Naval Research Laboratory, Washington</i>), B. Ji, E. Rabani, R. Vaxenburg, O. Ashkenazi, D. Azulay, U. Banin, O. Millo Dielectric Confinement and Excitonic Effects in Two-Dimensional Nanoplatelets



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13:35 - 13:55	<u>Dan Congreve</u> (<i>Rowland Institute at Harvard, Massachusetts, US</i>), Mahesh Gangishetty, Sanders Sam,
1.3-I2	Shaocong Hou, Qimin Quan Enhanced Perovskite LEDs via Doping
13:55 - 14:15	<u>Joseph Luther</u> (<i>National Renewable Energy Laboratory, Golden, Colorado</i>), Young-Hoon Kim, Matthew Beard,
1.3-I3	Yaxin Zhai, Joseph Berry Strategies to Achieve High Circularly Polarized Luminescence from Colloidal Organic-Inorganic Hybrid Perovskite Nanocrystals
14:15 - 14:35	Discussion
15:00 - 16:30	ePoster Session

October 23rd - Day 4 (Friday)

08:30 - 08:35 **PerNC Introduction nanoGe**

08:35 - 08:45 **PerNC Session Introduction 2.1 - Gabriele Raino**

PerNC 2.1

Chair: Maryna Bodnarchuk

08:45 - 09:05 Maksym V. Kovalenko (*ETH Zürich, Department of Chemistry and Applied Biosciences, Switzerland*)

2.1-I1 Cesium and Formamidinium Lead Halide Perovskite NCs: Genesis and Present Developments

09:05 - 09:25 Joo Sung Kim, Hobeom Kim, Jung-Min Heo, Min-Ho Park, Tae-Woo Lee (*Department of Materials Science and Engineering, Seoul National University*)

2.1-I2 Core/shell structured metal halide perovskites for high-efficiency light-emitting diodes

09:25 - 09:45 Ivan Infante (*Istituto Italiano di Tecnologia (IIT)*)

2.1-I3 Chemical Processes at the Surface of Colloidal Metal Halide Perovskite Nanocrystals

09:45 - 10:05 Discussion

10:05 - 10:10 **PerNC Short Break**

10:10 - 10:20 **PerNC Session Introduction 2.2 - Gabriele Raino**

PerNC 2.2

Chair: Gabriele Raino

10:20 - 10:40 Efrat Lifshitz (*Schulich Faculty of Chemistry, Solid State Institute, Russell Berrie Nanotechnology Institute, Helen Diller Quantum Center, Grant Technion Energy Program, Technion-Israel Institute of Technology, Israel*), Anjani Gavenkar, Allysa Kostadinov, Arthur Saphiro, Shahar Zuri, Yahel Barak

2.2-I1 The influence of magnetic doping and alloying on magneto-optical properties of three- and two-dimensional Perovskite structures

10:40 - 11:00 Brahim Lounis (*University of Bordeaux, Institut d'Optique & CNRS, France*)

2.2-I2 Photophysical properties of individual lead halide perovskite nanocrystals

11:00 - 11:20 Michael Becker, Franziska Krieg, Darius Urbonas, Gabriele Rainò, Maryna Bodnarchuk, Rainer Mahrt, Maksym Kovalenko, Thilo Stöferle (*IBM Research – Zurich*)

2.2-I3 Quantum light emission and strong light-matter interaction in cesium lead halide quantum dots

11:20 - 11:40 Discussion

11:40 - 13:00 **PerNC Break**

PerNC 2.3

Chair: Oleksandr Voznyy

13:00 - 13:10 Kyle McCall (*ETH – Swiss Federal Institute of Technology Zürich, Department of Chemistry and Applied Biosciences, Laboratory of Inorganic Chemistry, Switzerland*), Kostiantyn Sakhatskyi, Eberhard Lehmann, Bernhard Walfort, Adrian Losko, Federico Montanarella, Maryna Bodnarchuk, Franziska Krieg, Yusuf Kelestemur, David Mannes, Yevhen Shynkarenko, Sergii Yakunin, Maksym Kovalenko

2.3-T1 Perovskite Nanocrystal Scintillators for Fast Neutron Imaging

13:10 - 13:20 Maning Liu (*Faculty of Engineering and Natural Sciences, Tampere University*), Paola Vivo, Arto Hiltunen, Harri Ali-Löytty, Mika Valden, Essi Sarlin, Jan-Henrik Smått, Syeda Qudisia, Sri Matta, Salvy Russo

2.3-T2 Manganese-doping promotes the synthesis of bismuth-based perovskite nanocrystals while tuning their band structures

13:20 - 13:30 Jakob Dahl (*Department of Chemistry, University of California, Berkeley*), Xingzhi Wang, Xiao Huang, Emory Chan, Paul Alivisatos

2.3-T3 Elucidating the Weakly Reversible Cs–Pb–Br Perovskite Nanocrystal Reaction Network with High-Throughput Maps and Transformations

13:30 - 13:40	<u>Wenbi Shcherbakov-Wu</u> (<i>Massachusetts Institute Of Technology (MIT), Department of Chemistry</i>), Peter Sercel,
2.3-T4	Franziska Krieg, Maksym Kovalenko, William Tisdale Temperature-Independent Dielectric Constant in CsPbBr ₃ Nanocrystals Revealed by Linear Absorption Spectroscopy
13:40 - 14:10	Discussion

Poster Contribution

222	<u>Saptarshi Chakraborty</u> (<i>JNCASR Jawaharlal Nerhu Centre for Advanced Scientific Research, Jakkur</i>), Ranjani Viswanatha Local Surface Plasmon Assisted Metal Oxide Perovskite Heterostructure for Small Light Emitters
251	<u>Andreas Manoli</u> (<i>University of Cyprus</i>), Paris Papagiorgis, Caterina Bernasconi, Maryna Bodnarchuk, Maksym Kovalenko, Grigorios Itkos Probing the Influence of Didodecyldimethylammonium Bromide Treatment on the Luminescent Properties of Caesium Lead Bromide Nanocrystals
252	<u>Paris Papagiorgis</u> (<i>Experimental Condensed Matter Physics Lab, Department of Physics, University of Cyprus</i>), Eleftheria Charalambous, Caterina Bernasconi, Maryna I. Bodnarchuk, Maksym V. Kovalenko, Grigorios Itkos Thermal Annealing Studies of Formamidinium Lead Iodide (FAPbI ₃) Nanocrystals
254	<u>Modestos Athanasiou</u> (<i>Experimental Condensed Matter Physics Lab, Department of Physics, University of Cyprus</i>), Maryna I. Bodnarchuk, Maksym V. Kovalenko, Grigorios Itkos Continuous Wave Superluminescence from Solution Processed CsPbBr ₃ Nanocrystal Microcavities.
257	Caixia Huo, Chee Fai Fong, <u>Mohamed-Raouf Amara</u> (<i>Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, 637371, Singapore</i>), Yuqing Huang, Bo Chen, Hua Zhang, Lingjun Guo, Hejun Li, Wei Huang, Carole Diederichs, Qihua Xiong Spectroscopy of Single CsPbBr ₃ Perovskite Nanoplatelets
258	<u>Hamid Pashaei Adl</u> (<i>Instituto de Ciencia de Materiales (ICMUV), Universidad de Valencia, C/ Catedrático José Beltrán, 2, E-46980 Paterna, Spain.</i>), Setatira Gorji, Guillermo Muñoz Matutano, Andrés F. Gualdrón-Reyes, Ivan Mora-Seró, Juan P. Martínez Pastor Investigation of inorganic single CsPbX ₃ (X=I, Br) Perovskite nanocrystals by micro-photoluminescence
264	<u>Victoria Alejandra Gomez Andrade</u> (<i>Departamento Energía Solar, Gerencia de Investigaciones y Aplicaciones, CNEA, Argentina.</i>), Walter Herrera, Federico Redondo, Angelica M. Payan A., Federico Roncaroli, Natalia Correa, M. Dolores Perez 2-aminoterephthalic - MOFs as electron transporting layers in PSC