

## nanoGe Fall Meeting19 (NGFM19)

### #NCFun19. Fundamental Processes in Semiconductor Nanocrystals

Berlin, Germany, 2019 November 7th - 8th

Conference Chairs: Ivan Infante and Jonathan Owen

### Conference Program

| November 7th - Day 5 (Thursday) |                                                                                                                                                                                                                                    |
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| <b>NCFun 1.1</b>                |                                                                                                                                                                                                                                    |
| 09:00 - 09:30                   | <u>Brandi Cossairt</u> ( <i>University of Washington, Department of Chemistry, Seattle, WA 98195-1700</i> )                                                                                                                        |
| 1.1-I1                          | Understanding and Directing the Structure and Properties of Indium Phosphide Nanocrystals through Chemistry                                                                                                                        |
| 09:30 - 10:00                   | <u>Zeger Hens</u> ( <i>Department of Chemistry, Ghent University, Krijgslaan 281 - S3, 9000 Gent, Belgium</i> )                                                                                                                    |
| 1.1-I2                          | Properties of the Bright Exciton in InP Quantum Dots                                                                                                                                                                               |
| 10:00 - 10:30                   | <u>Sohee Jeong</u> ( <i>Sungkyunkwan University (SKKU)</i> )                                                                                                                                                                       |
| 1.1-I3                          | III-V Colloidal Nanocrystals: Control over the Covalent Surfaces                                                                                                                                                                   |
| 10:30 - 11:00                   | <b>Coffee Break</b>                                                                                                                                                                                                                |
| <b>NCFun 1.2</b>                |                                                                                                                                                                                                                                    |
| 11:00 - 11:30                   | <u>Nathan Neale</u> ( <i>Chemical and Nanoscale Sciences Center, National Renewable Energy Laboratory</i> ), Michael Carroll, Rens Limpens, Lance Wheeler, Gregory Pach                                                            |
| 1.2-I1                          | Surface Chemistry Effects on Quantum Confinement in Group IV Nanocrystals                                                                                                                                                          |
| 11:30 - 12:00                   | <u>Heather Kulik</u> ( <i>Department of Chemical Engineering, Massachusetts Institute of Technology</i> )                                                                                                                          |
| 1.2-I2                          | Electronic Structure Origins of Surface-Dependent Growth in III-V Quantum Dots                                                                                                                                                     |
| 12:00 - 12:30                   | <u>Alina Schimpf</u> ( <i>University of California San Diego</i> ), Alexander Rachkov                                                                                                                                              |
| 1.2-O1                          | Synthesis of Monodisperse and Size-Tunable Colloidal Copper Phosphide Nanocrystals by Redox Disproportionation of Aminophosphine                                                                                                   |
| 12:30 - 14:00                   | <b>Lunch</b>                                                                                                                                                                                                                       |
| <b>NCFun19 1.3</b>              |                                                                                                                                                                                                                                    |
| 14:00 - 14:30                   | <u>Arjan Houtepen</u> ( <i>Delft University of Technology (TU Delft)</i> )                                                                                                                                                         |
| 1.3-I1                          | Electrochemical Control over Semiconductor Nanomaterials: Doping and Surface Reduction                                                                                                                                             |
| 14:30 - 15:00                   | <u>Celso de Mello Donega</u> ( <i>Debye Institute for Nanomaterials Science, Utrecht University, The Netherlands</i> ), Chenghui Xia, Wentao Wang, Liang Du, Freddy Rabouw, Dave van den Heuvel, Hans C. Gerritsen, Hedi Mattoussi |
| 1.3-O1                          | Förster Resonance Energy Transfer between Colloidal CuInS <sub>2</sub> /ZnS Quantum Dots and Dark Quenchers                                                                                                                        |
| 15:00 - 15:15                   | <u>Solrun Gudjonsdottir</u> ( <i>Technical University of Delft</i> ), Ward van der Stam, Christel Koopman, Bob Kwakkenbos, Arjan Houtepen                                                                                          |
| 1.3-O2                          | On the Stability of Permanent Electrochemical Doping of Quantum Dot, Fullerene and Conductive Polymer Films in Frozen Electrolytes for Use in Semiconductor Devices                                                                |
| 15:15 - 15:30                   | <u>Felix Thiel</u> ( <i>Institute of Physical Chemistry, University of Hamburg</i> ), Cristina Palencia Ramirez, Horst Weller                                                                                                      |
| 1.3-O3                          | Cation Exchange Reactions in Nanorods: Vacancy-Mediated Diffusion in Cu-deficient Cu(2-x)S Nanorods during the Formation of a Ternary System                                                                                       |
| 15:30 - 16:00                   | <b>Coffee Break</b>                                                                                                                                                                                                                |
| <b>NCFun19 1.4</b>              |                                                                                                                                                                                                                                    |
| 16:00 - 16:15                   | <u>Anumol s</u> ( <i>Solid State and Structural Chemistry Unit, Indian Institute of Science (IN)</i> ), Biswajit Bhattacharyya, V. V. R. Kishore, Abhinav Kumar, Guru Pratheep Rajasekar, D. D. Sarma, Anshu Pandey                |
| 1.4-O1                          | Spectroscopic Insights into the Electronic Structure of Copper Iron Sulfide Nanocrystals                                                                                                                                           |

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| 16:15 - 16:30<br>1.4-O2 | <u>Cristina Palencia Ramírez</u> ( <i>Institute of Physical Chemistry, University of Hamburg</i> ), Robert Seher, Jan Krohn, Felix Thiel, Felix Lehmkuhler, Horst Weller<br>Formation Dynamics of Nanocrystals: In-situ Observation of the Growth of CdSe NCs Via Magic-sized Clusters Intermediates. |
| 16:30 - 17:00<br>1.4-I1 | <u>Oleksandr Voznyy</u> ( <i>University of Toronto Scarborough</i> )<br>Ab Initio Studies of Surface Chemistry and Exciton Fine Structure in Semiconductor Nanocrystals                                                                                                                               |

17:00 - 19:00 **Poster Session**

## November 8th - Day 6 (Friday)

### Plenary Session

|                             |                                                                                                                                                                                                                                                                             |
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| 09:00 - 09:30<br>Session-K1 | <u>Dmitri Talapin</u> ( <i>Department of Chemistry, University of Chicago, Chicago, Illinois 60637, USA</i> )<br>Self-organization of Electrostatically and Sterically Stabilized Colloidal Nanocrystals: The Roles of Topology, Image Charges and Non-classical Nucleation |
| 09:00 - 09:30<br>Session-K2 | <u>Xiaoyang Zhu</u> ( <i>Department of Chemistry, Columbia University, New York, New York 10027, United States</i> )<br>Ferroelectric Polarons in Lead Halide Perovskites                                                                                                   |

### NCFun 2.1

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| 09:30 - 10:00<br>2.1-I1 | <u>Raquel Galian</u> ( <i>Institute of Molecular Science, University of Valencia, c/ Cat. José Beltrán 2, Paterna, 46980, Valencia, Spain</i> ), Soranyel Gonzalez Carrero, Ignacio Rosa-Pardo, Julia Pérez-Prieto<br>Critical Role of Ligands on the Photoluminescence and Morphology of Colloidal Perovskite Nanocrystals |
| 10:00 - 10:30           |                                                                                                                                                                                                                                                                                                                             |

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

### NCFun19 2.2

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| 11:00 - 11:15<br>2.2-O2 | <u>Valeria Mantella</u> ( <i>Laboratory of Nanochemistry for Energy, EPFL, Switzerland</i> ), Silviya Ninova, Seryio Saris, Anna Loidice, Ulrich Aschauer, Raffella Buonsanti<br>Synthesis and Size-dependent Optical Properties of Intermediate Band Gap Cu <sub>3</sub> VS <sub>4</sub> Nanocrystals |
| 11:15 - 11:30<br>2.2-O3 | <u>Evert Dhaene</u> ( <i>Department of Chemistry, Ghent University</i> ), Jonas Billet, Ellie Bennett, Isabel Van Driessche, Jonathan De Roo<br>The Trouble With 1-Octadecene: Polymerization During Nanocrystal Synthesis                                                                             |
| 11:30 - 12:00<br>2.2-I1 | <u>Iván Mora-Seró</u> ( <i>Institute of Advanced Materials (INAM), Universitat Jaume I</i> )<br>Phase Segregation in Perovskite Nanoparticles and Applications of these Materials in Photocatalytic Processes                                                                                          |
| 12:00 - 12:30<br>2.2-O1 | <u>Anna Loidice</u> ( <i>Laboratory of Nanochemistry for Energy, EPFL, Switzerland</i> ), Seryio Saris, Raffaella Buonsanti<br>Metal Oxide Shell to Study Nanoscale Phenomena in Perovskite Quantum Dots                                                                                               |

12:30 - 14:00 **Lunch**

### NCFun 2.3

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| 14:00 - 14:30<br>2.3-I1 | <u>Maryna Bodnarchuk</u> ( <i>EMPA - Swiss Federal Laboratories for Materials Science and Technology</i> ), Simon Boehme, Caterina Bernasconi, Maksym Kovalenko, Ivan Infante<br>Surface Chemistry of Colloidal Cesium Lead Halides Nanocrystals |
| 14:30 - 15:00<br>2.3-I2 | <u>Daniel Gamelin</u> ( <i>University of Washington, Department of Chemistry, Seattle, WA 98195-1700</i> )<br>Solar Quantum Cutting and Spectral Downconversion using Ytterbium-Doped Metal-Halide Perovskites                                   |
| 15:00 - 15:30<br>2.3-I3 | <u>Liberato Manna</u> ( <i>Istituto Italiano di Tecnologia (IIT), Genova, Italy</i> )<br>Beyond Lead Halide Perovskite Nanocrystals                                                                                                              |

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

### CNFun 2.4

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| 16:00 - 16:15<br>2.4-O1 | <u>Marcello Righetto</u> ( <i>Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University 637371 Singapore</i> ), Swee Sien Lim, David Giovanni, Melvin Lim, Tze Chien Sum<br>Cooling and Trapping. A Complete Map of Hot Carrier Processes in Hybrid Perovskite Nanocrystals |
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| 16:15 - 16:30<br>2.4-O2 | <p><u>M. Yenal Yalcinkaya</u> (<i>Department of Materials Science and Engineering, Izmir Institute of Technology, Turkey</i>),<br/>C. Meric Guvenc, Sercan Ozen, Hasan Sahin, Mustafa M. Demir<br/>Enhanced stability and optical properties of Gd<sup>3+</sup> doped CsPbI<sub>3</sub> nanocrystals</p> |
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### Poster Contribution

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| 097 | <p><u>Servio Saris</u> (<i>Laboratory of Nanochemistry for Energy, EPFL, Switzerland</i>), Anna Loiudice, Raffaella Buonsanti<br/>Driving Chemical Reactions with a Metal/perovskite Nanocrystal Energy Transfer Photosystem</p>                                                                                          |
| 190 | <p><u>Christian Dieleman</u> (<i>AMOLF</i>), Weiyi Ding, Biplap Patra, Harshal Agrawal, Erik Garnett, Sonia Castellanos, Bruno Ehrler<br/>Direct Patterning of Nanocrystals by E-beam Lithography</p>                                                                                                                     |
| 249 | <p><u>Dima Bederak</u> (<i>Zernike Institute for Advanced Materials, University of Groningen, Nijenborgh 4, Groningen 9747 AG, The Netherlands</i>), Nataliia Sukharevksa, Dmitry N. Dirin, Maksym V. Kovalenko, Maria A. Loi<br/>Novel S-rich PbS QDs as a promising material for p-type layer in PbS QD solar cells</p> |