

## nanoGe Fall Meeting 2018 (FallMeeting18)

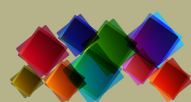
### S5 Charge Carrier Dynamics at the Nanoscale

**Torremolinos, Spain, 2018 October 22nd - 24th**

**Conference Chairs: David Egger, Arjan Houtepen and Freddy Rabouw**

#### Conference Program

| October 22nd - Day 1 (Monday)                   |                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>Plenary session 1</b><br>Chair: Mischa Bonn  |                                                                                                                                                                                                                                                                                                                                                                                                |
| 09:00 - 09:30<br>1-K1                           | <u>Victor Klimov</u> ( <i>Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA</i> )<br>Colloidal Quantum Dot Lasing: Historical Perspective and Recent Progress                                                                                                                                                                                                                  |
| <b>Plenary Session 2</b><br>Chair: Kevin Sivula |                                                                                                                                                                                                                                                                                                                                                                                                |
| 09:00 - 09:30<br>2-K1                           | <u>Yun Jeong Hwang</u> ( <i>Korea Institute of Science and Technology (KIST)</i> ), Byoun Koun Min, Hyeong-Suk Oh<br>Electrochemical Conversion of CO <sub>2</sub> toward Valuable Chemicals for Solar-to-Chemical Conversion Application                                                                                                                                                      |
| <b>Dyman S5.1</b><br>Chair: Enrique Cánovas     |                                                                                                                                                                                                                                                                                                                                                                                                |
| 09:30 - 10:00<br>S5.1-O1                        | <u>Maryam Alimoradi Jazi</u> ( <i>Condensed Matter and Interfaces, Debye Institute for nanomaterials science, Utrecht University</i> ), Wiel Evers, Thomas Altantzis, Christophe Delerue, Sara Bals, Laurens Sibbeles, Arjan Houtepen, Daniel Vanmaekelberg<br>Band Occupation and Charge Transport in CdSe Nanocrystal Superlattices                                                          |
| 10:00 - 10:30<br>S5.1-O2                        | <u>Willem Walravens</u> ( <i>Physics and Chemistry of Nanostructures, Ghent University, 9000 Ghent, Belgium</i> ), Filip Geenen, Eduardo Solano, Jolien Dendooven, Athmane Tadjine, Nayyera Mahmoud, Gunther Roelkens, Christophe Delerue, Christophe Detavernier, Zeger Hens<br>Setting Carriers Free – Healing Faulty Interfaces Promotes Delocalization and Transport in Nanocrystal Solids |
| 10:30 - 11:00                                   | <b>Coffee Break</b>                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Dyman S5.2</b><br>Chair: Vanessa Wood        |                                                                                                                                                                                                                                                                                                                                                                                                |
| 11:00 - 11:30<br>S5.2-O1                        | <u>Federico Montanarella</u> ( <i>Universiteit Utrecht</i> ), Margherita Biondi, Stijn Hinterding, Daniel Vanmaekelbergh, Freddy Rabouw<br>Reversible Charge Carrier Trapping Slows Down Förster Energy Transfer in CdSe/CdS Quantum-Dot Solids                                                                                                                                                |
| 11:30 - 12:00<br>S5.2-I1                        | <u>Ivan Infante</u> ( <i>Department of Chemistry and Pharmaceutical Sciences, Division of Theoretical Chemistry, Vrije Universiteit Amsterdam, De Boelelaan 1081, 1081 HV Amsterdam, The Netherlands</i> )<br>Size- and Temperature- Dependent Hot Carrier Cooling in CsPbBr <sub>3</sub> Nanocrystals                                                                                         |
| 12:00 - 12:30<br>S5.2-I2                        | <u>Matthew Beard</u> ( <i>National Renewable Energy Laboratory, Golden, Colorado, USA</i> )<br>Controlling the Properties of Colloidal Quantum Dots for Solar Energy Applications                                                                                                                                                                                                              |
| 12:30 - 14:30                                   | <b>Lunch</b>                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Dyman S5.3</b><br>Chair: Ivan Infante        |                                                                                                                                                                                                                                                                                                                                                                                                |
| 14:30 - 15:00<br>S5.3-O1                        | <u>Emmanuel Lhuillier</u> ( <i>Sorbonne Universités, UPMC Univ. Paris 06, CNRS-UMR 7588, Institut des NanoSciences de Paris, 4 place Jussieu, 75005 Paris, France</i> ), Bertille Martinez, Clement livache, nicolas goubet<br>Dynamics in Narrow Band Gap Nanocrystals                                                                                                                        |
| 15:00 - 15:30<br>S5.3-O2                        | <u>P. Tim Prins</u> ( <i>Debye Institute for Nanomaterials Science, Utrecht University</i> ), Pieter Geiregat, Dirk A. W. Spruijt, Zeger Hens, Freddy T. Rabouw, Celso de Mello Donega, Daniel A. M. Vanmaekelbergh<br>Doping InP Quantum Dots with Cu <sup>+</sup> slows down Hot Electron Cooling                                                                                            |



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| 15:30 - 16:00<br>S5.3-O3 | <u>Aparajita Das</u> ( <i>Department of Chemistry, Indian Institute of Technology Hyderabad</i> ), Ankita Kolay, Deepa Melepurath<br>Poly(3,4-ethylenedioxyppyrole) Counter Electrode and an Electrolyte Additive for Quantum Dot Solar Cells |
| 16:00 - 16:30<br>S5.3-I1 | <u>Emily Weiss</u> ( <i>Department of Chemistry, Northwestern University, Evanston, Illinois 60208, USA</i> ), Ofer Kedem, Mohamad Kodaimati<br>Room Temperature Electron Ratchets                                                            |
| 16:30 - 17:00<br>S5.3-I2 | <u>Enrique Canovas</u> ( <i>IMDEA Nanoscience</i> )<br>Band-Like Charge Transport in a Semiconducting Metal-Organic Framework                                                                                                                 |

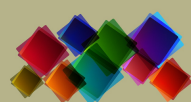
## October 23rd - Day 2 (Tuesday)

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| <b>Dyman S5.4</b><br>Chair: Stefano Sanvito  |                                                                                                                                                                                                                                                                                                                                                                                                             |
| 09:00 - 09:30<br>S5.4-O1                     | <u>Xiaoping Chen</u> ( <i>Department of Chemistry, National University of Singapore</i> ), Harshini Annadata, David Egger, Christian Nijhuis<br>Tuning the Tunnelling Decay Coefficient Using Single Polarizable Atoms via Energy Level Engineering of the Frontier Orbitals                                                                                                                                |
| 09:30 - 10:00<br>S5.4-O2                     | <u>José Manuel Vicent Luna</u> ( <i>Department of Physical, Chemical and Natural Systems, Universidad Pablo de Olavide, 41013 Sevilla, Spain</i> ), Azaceta Eneko, Said Hamad, José Manuel Ortiz Roldán, Ramón Tena Zaera, Sofía Calero, Juan Antonio Anta<br>Molecular Dynamics Analysis of Charge Transport in Ionic Liquid Electrolytes containing added salt with Mono, Di, and Trivalent Metal Cations |
| 10:00 - 10:30<br>S5.4-O3                     | <u>Jaime Colchero</u> ( <i>Universidad de Murcia</i> ), Miguel Ortuño, Maria Fernandez M.F. Orihuela, Andres Somoza, Emin Istif, Sandra Víctor-Roman, Thierry Grenet, Julien Delahaye, Ana Maria Benito, Wolfgang Maser, Elisa E. Palacios-Lidón<br>Slow Charge Relaxation in Highly Disordered Electronic Systems studied by Electrostatic Scanning Force Microscopy                                       |
| 10:30 - 11:00                                | <b>Coffee Break</b>                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Dyman S5.5</b><br>Chair: Leeor Kronik     |                                                                                                                                                                                                                                                                                                                                                                                                             |
| 11:00 - 11:30<br>S5.5-I1                     | <u>Stefano Sanvito</u> ( <i>School of Physics and CRANN, Trinity College Dublin</i> )<br>Different Flavours of Constrained Density Functional Theory for Charge Dynamics in Organic Materials                                                                                                                                                                                                               |
| 11:30 - 12:00<br>S5.5-I2                     | <u>Johannes V. Barth</u> ( <i>Physics Department, Technical University of Munich, D-85748 Garching, Germany</i> ), Hai Bi, Carlos-Andres Palma, Yuxian Gong, Peter Hasch, Mark Elbing, Marcel Mayor, Joachim Reichert<br>Vibrational Excitations & Conformational Switching in Single-Molecule Junctions                                                                                                    |
| 12:00 - 12:30<br>S5.5-I3                     | <u>David Cahen</u> ( <i>Weizmann Institute of Science &amp; Bar Ilan University</i> )<br>Proteins as Optoelectronic Materials...                                                                                                                                                                                                                                                                            |
| 12:30 - 14:30                                | <b>Lunch</b>                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Dyman S5.6</b><br>Chair: Thomas Kirchartz |                                                                                                                                                                                                                                                                                                                                                                                                             |
| 14:30 - 15:00<br>S5.6-O1                     | <u>Daniel Hernangomez-Perez</u> ( <i>Institute of Theoretical Physics, University of Regensburg, D-93050 Regensburg, Germany</i> ), Suman Gunasekaran, Iryna Davydenko, Seth Marder, Ferdinand Evers, Latha Venkataraman<br>Quantum Transport Properties of Pi-Conjugated Linear Molecular Junctions                                                                                                        |
| 15:00 - 15:30<br>S5.6-O2                     | <u>Felix J. Hofmann</u> ( <i>Institut für Experimentelle und Angewandte Physik, Universität Regensburg, Universitätsstraße 31, 93053 Regensburg, Germany</i> ), Maryna I. Bodnarchuk, Loredana Protesescu, Maksym V. Kovalenko, John M. Lupton, Jan Vogelsang<br>Exciton Gating and Triplet Deshelling in Single Dye Molecules Excited by Perovskite Nanocrystal FRET Antennae                              |

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| 15:30 - 16:00<br>S5.6-O3 | <u>Selina Olthof</u> ( <i>Institute of Physical Chemistry, University of Cologne, Germany</i> ), Kai Brinkmann, Ting Hu, Klaus Meerholz, Thoams Riedl<br>Metal Oxide Layers in Perovskite Solar Cells: a Double-Edged Sword                          |
| 16:00 - 16:30<br>S5.6-I1 | <u>Laura Herz</u> ( <i>Clarendon Laboratory, Department of Physics, University of Oxford, Parks Road, Oxford, OX1 3PU, United Kingdom</i> )<br>Effect of Nanoscale Phenomena on Charge Conduction and Recombination Mechanisms in Hybrid Perovskites |
| 16:30 - 17:00<br>S5.6-I2 | <u>Leeor Kronik</u> ( <i>Department of Materials and Interfaces, Weizmann Institute of Science, Rehovoth 76100, Israel.</i> )<br>Structural Dynamics in Lead-Halide Perovskites from First-Principles                                                |
| 17:30 - 19:00            | <b>Poster Session</b>                                                                                                                                                                                                                                |

### October 24th - Day 3 (Wednesday)

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| <b>Plenary session 3</b><br>Chair: Shannon Boettcher |                                                                                                                                                                                                                                                                                                                                                                                                     |
| 09:00 - 09:30<br>3-K1                                | <u>Francesca Maria Toma</u> ( <i>Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California 94720, United States</i> )<br>A New Portrait of Functional Complex Interfaces for Solar Fuel Devices                                                                                                                                                                       |
| <b>Plenary Session 4</b><br>Chair: David Egger       |                                                                                                                                                                                                                                                                                                                                                                                                     |
| 09:00 - 09:30<br>4-K1                                | <u>Vanessa Wood</u> ( <i>Laboratory for Interfacial Chemistry, ETH Zurich</i> )<br>Charge Transport in Nanocrystal Solids                                                                                                                                                                                                                                                                           |
| <b>Dyman S5.7</b><br>Chair: Felix Deschler           |                                                                                                                                                                                                                                                                                                                                                                                                     |
| 09:30 - 10:00<br>S5.7-I1                             | <u>Artem Bakulin</u> ( <i>Department of Chemistry, Imperial College London, South Kensington, London, SW7 2AZ, UK</i> )<br>Ultrafast Intraband Spectroscopy of Hot-Carrier Cooling in Lead-Halide Perovskites                                                                                                                                                                                       |
| 10:00 - 10:30<br>S5.7-I2                             | <u>Thomas Kirchartz</u> ( <i>IEK5-Photovoltaics, Forschungszentrum Jülich, 52425 Jülich, Germany</i> )<br>Long Lifetimes and Small Phonon Energies in Metal-Halide Perovskite Solar Cells                                                                                                                                                                                                           |
| 10:30 - 11:00                                        | <b>Coffee Break</b>                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Dyman S5.8</b><br>Chair: Artem Bakulin            |                                                                                                                                                                                                                                                                                                                                                                                                     |
| 11:00 - 11:30<br>S5.8-O1                             | Christian Gehrman, David Egger, <u>Robert Lovrincic</u> ( <i>Institute for High Frequency Technology, TU Braunschweig</i> )<br>Optical Phonons in Halide Perovskites and Implications for Charge Transport                                                                                                                                                                                          |
| 11:30 - 12:00<br>S5.8-O2                             | <u>Felix Deschler</u> ( <i>Cavendish Laboratory, University of Cambridge, JJ Thomson Avenue, Cambridge CB3 0HE, United Kingdom</i> ), Sascha Feldmann, Stuart MacPherson, Satyaprasad Senanayak, Jasmine Rivett, Mojtaba Abdi Jalebi, Guangjun Nan, David Beljonne, Sam Stranks, Michael Salia<br>Origin of High Photoluminescence in Mixed-Cation Perovskites: Photodoping from energetic disorder |
| 12:30 - 14:30                                        | <b>Lunch</b>                                                                                                                                                                                                                                                                                                                                                                                        |



## Poster Contribution

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|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 315 | <u>Gianluca Grimaldi</u> ( <i>Opto-electronic materials section, Department of Chemical Engineering, Faculty of Applied Sciences, Delft University of Technology</i> ), Ryan Crisp, Nicholas Kirkwood, Sachin Kinge, Laurens Siebbeles, Arjan Houtepen<br>Ligand-Induced Control of Energy Level Alignment in QD Heterostructures                     |
| 318 | <u>Kaspars Malnieks</u> ( <i>Research Laboratory of Functional Materials Technology, Faculty of Materials Science and Applied Chemistry, Riga Technical University, Paula Valdena 3/7, Riga, LV1048, Latvia</i> ), Andris Sutka, Linards Lapcinskis<br>Enhanced Performance of Triboelectric Nanogenerators Based on Ferroelectric Nanoparticles      |
| 322 | <u>Jaco Geuchies</u> ( <i>Optoelectronic Materials Section, Department of Chemical Engineering, Delft University of Technology, Julianalaan 136, 2628 BL Delft, The Netherlands.</i> ), gianluca grimaldi, nicholas kirkwood, ward van der stam, arjan houtepen<br>Measuring and Modelling the Build-up of Optical Gain in Semiconductor Quantum Dots |
| 331 | Sven-Hendrik Lohmann, <u>Christian Strelow</u> ( <i>Institut für Physikalische Chemie, Universität Hamburg</i> ), Alf Mews, Tobias Kipp<br>Spectral Diffusion: A Monitor for the Electron and Hole Localization in Colloidal Semiconductor DotRod Nanocrystals                                                                                        |