

nanoGe Fall Meeting 2018 (FallMeeting18)

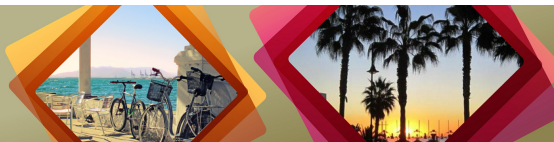
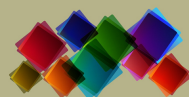
S5 Charge Carrier Dynamics at the Nanoscale

Torremolinos, Spain, 2018 October 22nd - 24th

Conference Chairs: David Egger, Arjan Houtepen and Freddy Rabouw

Conference Program

October 22nd - Day 1 (Monday)	
	<p>Plenary session 1 Chair: Mischa Bonn Room: Mediterraneo ABC</p>
09:00 - 09:30 1-K1	<p><u>Victor Klimov</u> (<i>Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA</i>) Colloidal Quantum Dot Lasing: Historical Perspective and Recent Progress</p>
	<p>Plenary Session 2 Chair: Kevin Sivula Room: Torremolinos AB</p>
09:00 - 09:30 2-K1	<p><u>Yun Jeong Hwang</u> (<i>Korea Institute of Science and Technology (KIST)</i>), Byoun Koun Min, Hyeong-Suk Oh Electrochemical Conversion of CO₂ toward Valuable Chemicals for Solar-to-Chemical Conversion Application</p>
	<p>Dyman S5.1 Chair: Enrique Cánovas Room: Mediterraneo EF</p>
09:30 - 10:00 S5.1-O1	<p><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 Band Occupation and Charge Transport in CdSe Nanocrystal Superlattices</p>
10:00 - 10:30 S5.1-O2	<p><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 Setting Carriers Free – Healing Faulty Interfaces Promotes Delocalization and Transport in Nanocrystal Solids</p>
10:30 - 11:00	<p>Coffee Break</p>
	<p>Dyman S5.2 Chair: Vanessa Wood Room: Mediterraneo EF</p>
11:00 - 11:30 S5.2-O1	<p><u>Federico Montanarella</u> (<i>Universiteit Utrecht</i>), Margherita Biondi, Stijn Hinterding, Daniel Vanmaekelbergh, Freddy Rabouw Reversible Charge Carrier Trapping Slows Down Förster Energy Transfer in CdSe/CdS Quantum-Dot Solids</p>
11:30 - 12:00 S5.2-I1	<p>Ivan Infante, <u>Simon Boehme</u> (<i>Department of Chemistry and Pharmaceutical Sciences, Division of Theoretical Chemistry, Vrije Universiteit Amsterdam, De Boelelaan 1081, 1081 HV Amsterdam, The Netherlands</i>) Size- and Temperature- Dependent Hot Carrier Cooling in CsPbBr₃ Nanocrystals</p>
12:00 - 12:30 S5.2-I2	<p><u>Matthew Beard</u> (<i>National Renewable Energy Laboratory, Golden, Colorado, USA</i>) Controlling the Properties of Colloidal Quantum Dots for Solar Energy Applications</p>
12:30 - 14:30	<p>Lunch</p>
	<p>Dyman S5.3 Chair: Ivan Infante Room: Mediterraneo EF</p>



- 14:30 - 15:00 **Emmanuel Lhuillier** (*Sorbonne Universités, UPMC Univ. Paris 06, CNRS-UMR 7588, Institut des NanoSciences de Paris, 4 place Jussieu, 75005 Paris, France*), Bertille Martinez, Clement livache, nicolas goubet
S5.3-O1 Dynamics in Narrow Band Gap Nanocrystals
- 15:00 - 15:30 **P. Tim Prins** (*Debye Institute for Nanomaterials Science, Utrecht University*), Pieter Geiregat, Dirk A. W. Spruijt, Zeger Hens, Freddy T. Rabouw, Celso de Mello Donega, Daniel A. M. Vanmaekelbergh
S5.3-O2 Doping InP Quantum Dots with Cu⁺ slows down Hot Electron Cooling
- 15:30 - 16:00 **Aparajita Das** (*Department of Chemistry, Indian Institute of Technology Hyderabad*), Ankita Kolay, Deepa Melepurath
S5.3-O3 Poly(3,4-ethylenedioxyppyrole) Counter Electrode and an Electrolyte Additive for Quantum Dot Solar Cells
- 16:00 - 16:30 **Gianluca Grimaldi** (*Optoelectronic Materials Section, Department of Chemical Engineering, Delft University of Technology, Van der Maasweg 9, 2629 HZ Delft, The Netherlands*), Arjan Houtepen, R.W. Crisp, S. Ten Brinck, F. Zapata, M. van Ouwendorpa, M. van den Brom, N. Renaud, N. Kirkwood, W. Evers, S. Kinge, I. Infante, L.D.A. Siebbeles
S5.3-O4 Controlling (hot) electron transfer in quantum dot heterojunction films
- 16:30 - 17:00 **Enrique Canovas** (*IMDEA Nanoscience*)
S5.3-I1 Band-Like Charge Transport in a Semiconducting Metal-Organic Framework

October 23rd - Day 2 (Tuesday)

Dyman S5.4

Chair: Stefano Sanvito
Room: Mediterraneo EF

- 09:00 - 09:30 **Xiaoping Chen, Harshini Annadata** (*Department of Chemistry, National University of Singapore*), David Egger, Christian Nijhuis
S5.4-O1 Tuning the Tunnelling Decay Coefficient Using Single Polarizable Atoms via Energy Level Engineering of the Frontier Orbitals
- 09:30 - 10:00 **José Manuel Vicent Luna** (*Department of Physical, Chemical and Natural Systems, Universidad Pablo de Olavide, 41013 Sevilla, Spain*), Azaceta Eneko, Said Hamad, José Manuel Ortiz Roldán, Ramón Tena Zaera, Sofía Calero, Juan Antonio Anta
S5.4-O2 Molecular Dynamics Analysis of Charge Transport in Ionic Liquid Electrolytes containing added salt with Mono, Di, and Trivalent Metal Cations
- 10:00 - 10:30 **Jaime Colchero** (*Universidad de Murcia*), 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
S5.4-O3 Slow Charge Relaxation in Highly Disordered Electronic Systems studied by Electrostatic Scanning Force Microscopy

10:30 - 11:00 Coffee Break

Dyman S5.5

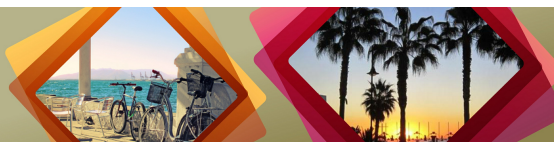
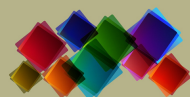
Chair: Leeor Kronik
Room: Mediterraneo EF

- 11:00 - 11:30 **Stefano Sanvito** (*School of Physics and CRANN, Trinity College Dublin*)
S5.5-I1 Different Flavours of Constrained Density Functional Theory for Charge Dynamics in Organic Materials
- 11:30 - 12:00 **Johannes V. Barth** (*Physics Department, Technical University of Munich, D-85748 Garching, Germany*), Hai Bi, Carlos-Andres Palma, Yuxian Gong, Peter Hasch, Mark Elbing, Marcel Mayor, Joachim Reichert
S5.5-I2 Vibrational Excitations & Conformational Switching in Single-Molecule Junctions
- 12:00 - 12:30 **David Cahen** (*Weizmann Institute of Science & Bar Ilan University*)
S5.5-I3 Proteins as Optoelectronic Materials...

12:30 - 14:30 Lunch

Dyman S5.6

Chair: Thomas Kirchartz
Room: Mediterraneo EF



14:30 - 15:00 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 Quantum Transport Properties of Pi-Conjugated Linear Molecular Junctions
15:00 - 15:30 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 Exciton Gating and Triplet Deshelling in Single Dye Molecules Excited by Perovskite Nanocrystal FRET Antennae
15:30 - 16:00 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 Metal Oxide Layers in Perovskite Solar Cells: a Double-Edged Sword
16:00 - 16:30 S5.6-I1	<u>Laura Herz</u> (<i>Clarendon Laboratory, Department of Physics, University of Oxford, Parks Road, Oxford, OX1 3PU, United Kingdom</i>) Effect of Nanoscale Phenomena on Charge Conduction and Recombination Mechanisms in Hybrid Perovskites
16:30 - 17:00 S5.6-I2	<u>Leor Kronik</u> (<i>Department of Materials and Interfaces, Weizmann Institute of Science, Rehovoth 76100, Israel.</i>) Structural Dynamics in Lead-Halide Perovskites from First-Principles

17:30 - 19:00 **Poster Session**

October 24th - Day 3 (Wednesday)

Plenary session 3

Chair: Shannon Boettcher
Room: Mediterraneo ABC

09:00 - 09:30 3-K1	<u>Francesca Maria Toma</u> (<i>Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California 94720, United States</i>) A New Portrait of Functional Complex Interfaces for Solar Fuel Devices
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Plenary Session 4

Chair: David Egger
Room: Mediterraneo DEF

09:00 - 09:30 4-K1	<u>Vanessa Wood</u> (<i>Laboratory for Interfacial Chemistry, ETH Zurich</i>) Charge Transport in Nanocrystal Solids
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Dyman S5.7

Chair: Freddy Rabouw
Room: Mediterraneo DEF

09:30 - 10:00 S5.7-I1	<u>Artem Bakulin</u> (<i>Department of Chemistry, Imperial College London, South Kensington, London, SW7 2AZ, UK</i>) Ultrafast Intra-band Spectroscopy of Hot-Carrier Cooling in Lead-Halide Perovskites
10:00 - 10:30 S5.7-I2	<u>Thomas Kirchartz</u> (<i>IEK5-Photovoltaics, Forschungszentrum Jülich, 52425 Jülich, Germany</i>) Long Lifetimes and Small Phonon Energies in Metal-Halide Perovskite Solar Cells

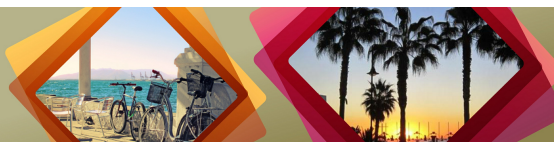
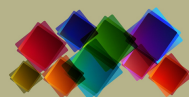
10:30 - 11:00 **Coffee Break**

Dyman S5.8

Chair: Artem Bakulin
Room: Mediterraneo DEF

11:00 - 11:30 S5.8-O1	Christian Gehrman, David Egger, <u>Robert Lovrincic</u> (<i>Institute for High Frequency Technology, TU Braunschweig</i>) Optical Phonons in Halide Perovskites and Implications for Charge Transport
11:30 - 12:00 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 Origin of High Photoluminescence in Mixed-Cation Perovskites: Photodoping from energetic disorder

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



Poster Contribution

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 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 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 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 Spectral Diffusion: A Monitor for the Electron and Hole Localization in Colloidal Semiconductor DotRod Nanocrystals