

nanoGe Fall Meeting 2018 (FallMeeting18)

S6 Solution-based Two-dimensional Nanomaterials Sol2D

Torremolinos, Spain, 2018 October 24th - 26th

Conference Chairs: Christophe Delerue, Sandrine Ithurria and Christian Klinke

Conference Program

October 24th - Day 3 (Wednesday)

Sol2D S6.1

Chair: Christian Klinke
Room: Torremolinos DE

- 14:30 - 15:00 David Norris (*Optical Materials Engineering Laboratory, ETH Zürich, Swiss*)
S6.1-I1 The Growth Mechanism of Semiconductor Nanoplatelets
- 15:00 - 15:30 Efrat Lifshitz (*aculty of Chemistry, Solid State Institute, Russell Berrie Nanotechnology Institute and Grand Technion Energy Program, Technion – Israel Institute of Technology, Haifa, 32000, Israel*)
S6.1-I2 Magneto-Optical Properties of Two-Dimensional Semiconductors: Transition Metal Phosphorous Trichalcogenides, Indium Chacogenides and Magnetically Doped Colloidal Nanoplatelets
- 15:30 - 16:00 Alexander Achtstein (*Technical University of Berlin*), Riccardo Scott, Jan Heckmann, Anatol Prudnikau, Artsiom Antanovich, Nina Owschimikow, Nicolai Grosse, Mikhail Artemyev, Ulrike Woggon, Juan Climente
S6.1-I3 Tuning the Photonic Properties of Colloidal Quantum Wells
- 16:00 - 16:30 Hilmi Volkan Demir (*Nanyang Technological University (NTU), Singapore*)
S6.1-I4 Colloidal Photonics of Atomically Flat 2D Nanocrystals
- 16:30 - 17:00 Liangfeng Sun (*Department of Physics and Astronomy, Bowling Green State University, Bowling Green, Ohio 43403, United States*), Zhoufeng Jiang, Antara Debnath Antu, Shashini Premathilka, Yiteng Tang, Ghadendra Bhandari, Kamal Subedi, Matthew Leopold, Nick Reilly, Simeen Khan, Douglas Dimick, Cody Stombaugh, Angelic Mandell, Yufan He, Peter Lu, Jianjun Hu, Andrey Voevodin, Ajit Roy, Paul Roland, Randy Ellingson, Joey Leffler, Alexey Zayak
S6.1-I5 Synthesis and Optical Spectroscopy of Colloidal PbS Nanosheets

October 25th - Day 4 (Thursday)

Plenary Session 5

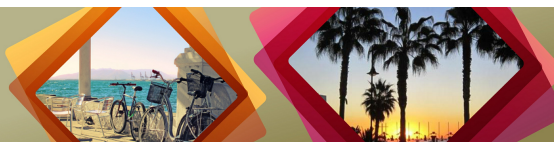
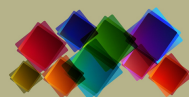
Chair: Daniel Vanmaekelbergh
Room: Torremolinos AB

- 09:00 - 09:30 Maksym Kovalenko (*Institute of Inorganic Chemistry, Department of Chemistry and Applied Bioscience, ETH Zurich, 8093 Zurich, Switzerland*)
5-K1 Colloidal Nanocrystals of APbX₃ Perovskites [A=Cs⁺, CH(NH₂)₂⁺, X=Cl⁻, Br⁻, I⁻]: Surface Chemistry, Self-Assembly and Potential Applications

Sol2D S6.2

Chair: Sandrine Ithurria
Room: Torremolinos DE

- 09:30 - 10:00 Alf Mews (*Institute of Physical Chemistry, University of Hamburg*), Monika Kobylinski, Charllotte Ruhmlieb, Vi Pham, Jan Siebels, Andreas Kolditz
S6.2-O1 Synthesis and Electrical Properties of Photoactive Two Dimensional SnS Nanosheets
- 10:00 - 10:30 William Buhro (*Department of Chemistry, Washington University, St. Louis, MO 63119, USA*)
S6.2-I1 Facile Surface Exchanges in 2D CdSe Nanocrystals
- 10:30 - 11:00 **Coffee Break**



Sol2D S6.3

Chair: Christophe Delerue

- 11:00 - 11:30 **S6.3-I1** Gabriel Bester (*Universität Hamburg*)
Atomistic Theory of Excitonic Effects in 2D Materials
- 11:30 - 12:00 **S6.3-O1** Shalini Singh (*Physics and Chemistry of Nanostructures, Ghent University, 9000 Ghent, Belgium*), Renu Tomar, Stephanie ten Brinck, Jonathan De Roo, Pieter Geiregat, José C. Martins, Ivan Infante, Zeger Hens
The Surface Chemistry of Colloidal II-VI Two-Dimensional Nanoplatelets
- 12:00 - 12:30 **S6.3-I2** Anna Rodina (*Ioffe Institute*)
Spin-Dependent Optical Properties of CdSe Nanoplatelets
- 12:30 - 14:30 **Lunch**

Sol2D S6.4

Chair: Christian Klinke
Room: Torremolinos DE

- 14:30 - 15:00 **S6.4-I2** Daniel Vanmaekelbergh (*Universiteit Utrecht*), Joep Peters, Maryam Alimoradi Jazi, Sophia Buhbut-Sinai, Sara Bals, Giuseppe Soligno
2-D Silicene Honeycomb Superlattices from PbSe Nanocrystals by Nanocrystal Assembly at an Interface Followed by Oriented Attachment
- 15:00 - 15:30 **S6.4-I3** Richard Schaller (*Argonne National Laboratory, Lemont, Illinois, United States*)
Colloidal Quantum Wells for Energy Manipulations on Fast Timescales
- 15:30 - 15:45 **S6.4-O3** Lars Klepzig (*Institute of Physical Chemistry and Electrochemistry, Leibniz Universität Hannover, Callinstr. 3A, 30167 Hannover, Germany*), Jan Poppe, Eugen Klein, Christian Klinke, Armin Feldhoff, Nadja C. Bigall
Thermoelectric Properties of Aerogels of PbS Nanoplatelets
- 15:45 - 16:00 **S6.4-O2** Anja Schlosser (*Institute of Physical Chemistry and Electrochemistry, Leibniz-Universität Hannover, Callinstr. 3A, D-30167 Hannover*), Jan Frederick Miethe, Franziska Lübke, Jan Gerrit Eckert, Lea Celiné Meyer, Nadja-Carola Bigall
3D Assemblies of CdSe Nanoplatelets for Application in Photoelectrochemical Sensing
- 16:00 - 16:30 **S6.4-O1** Aurelio Rossinelli (*4Optical Materials Engineering Laboratory, ETH Zurich, 8092 Zurich, Switzerland*), Andreas Riedinger, Philippe Knüsel, Patricia Marqués Gallego, Felipe Antolinez, David Norris
Color-Tunable CdSe-Based Core/Shell Nanoplatelets
- 16:30 - 17:00 **S6.4-I1** Emilio Perez (*IMDEA Nanociencia*)
From Liquid-Phase Exfoliated 2D Materials to Functioning Devices
- 17:30 - 19:00 **Poster session**

October 26th - Day 5 (Friday)

Plenary session 6

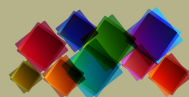
Chair: Sascha Sadewasser
Room: Torremolinos AB

- 09:00 - 09:30 **6-K1** Marina Leite (*University of Maryland*)
Probing Solar Cells at the Nanoscale through Real-Time Functional Imaging

Sol2D S6.5

Chair: Sandrine Ithurria
Room: Torremolinos DE

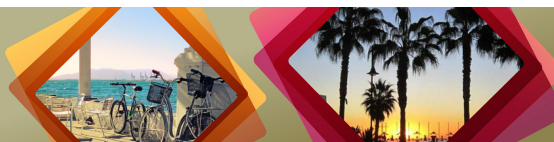
- 09:00 - 09:15 **S6.5-O3** Philip Schäfer (*neaspac GmbH*)
Scanning near-field optical microscopy and spectroscopy elucidates growth characteristics and free charge carrier distributions in nano-platelets with 10 nm spatial resolution
- 09:15 - 09:30 **S6.5-O4** Fu Li (*Institute of Physical Chemistry, University of Hamburg, 20146 Hamburg, Germany*), Mohammad Mehdi Ramin Moayed, Christian Klinke
Shape and Size Control of the Synthesis of 2D Tin Sulfide (SnS) Nanosheets and Electronic Application



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09:30 - 10:00 Laurens Siebbeles (*Opto-electronic materials section, Department of Chemical Engineering, Faculty of Applied Sciences, Delft University of Technology*)
S6.5-11 Ultrafast Dynamics of Charge Carriers and Excitons in 2D Metal Chalcogenide Materials

10:00 - 10:15 Bas Salzmann (*Universiteit Utrecht*), Christiaan Post, Daniel Vanmaekelbergh
S6.5-01 CdSe Nanorings: Synthesis and Opto-Electronic Properties

10:15 - 10:30 Joep Peters (*Universiteit Utrecht*), Thomas Altantzis, Sara Bals, Daniel Vanmaekelbergh
S6.5-02 Mono- and Multilayer Silicene-Type Honeycomb Lattices by Oriented Attachment of PbSe Nanocrystals: Synthesis, Structural Characterization, and Analysis of the Disorder.

Sol2D S6.6

Chair: Christophe Delerue
Room: Torremolinos DE

11:00 - 11:30 Benoit Mahler (*ILM - Institut Lumière Matière, CNRS*)
S6.6-11 Colloidal Synthesis of WS₂ Nanosheets: Chemical Control of Morphology and Crystal Structure.

11:30 - 11:45 Pengshang Zhou (*Physics and Chemistry of Nanostructures, Ghent University, 9000 Ghent, Belgium*), Shalini Singh, Pieter Schiettecatte, Zeger Hens
S6.6-01 Synthesis of Colloidal Tungsten Diselenide (WSe₂) Nanocrystals by Hot Injection Method

11:45 - 12:00 Bruce Parkinson (*Department of Chemistry, University of Wyoming, Laramie, WY, USA*), John Hoberg
S6.6-02 New 2D Nanoporous Covalent Organic Framework Materials with Functionalized

12:00 - 12:30 Prabhuraj Balakrishnan, Matthew J Fong (*Lancaster University, UK*), Christopher S woodhead, Ramon Bernardo Gavito, Robert J Young
S6.6-03 Efficient Light Emission from MoS₂ Flakes by in-solution Superacid Treatment

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

Sol2D S6.7

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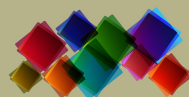
14:30 - 15:00 Marion Dufour (*Laboratoire de Physique et d'Etude des Matériaux, PSL Research University, CNRS UMR 8213, UPMC Sorbonne Université, ESPCI Paris, 10 rue Vauquelin, 75005 Paris, France*), Violette Steinmetz, Eva Izquierdo, Thomas Pons, Nicolas Lequeux, Emmanuel Lhuillier, Laurent Legrand, Maria Chamorro, Thierry Barisien, Sandrine Ithurria
S6.7-01 Engineering Bicolor Emission in 2D Core/Crown CdSe/CdSe_{1-x}Te Nanoplatelet Heterostructures Using Band-Offset Tuning

15:00 - 15:30 Jannika Lauth (*Carl von Ossietzky University Oldenburg*), Michele Failla, Francisco Manteiga Vázquez, Qianli Yu, Eugen Klein, Ryan Crisp, Christian Klinke, Sachin Kinge, Arjan Houtepen, Laurens Siebbeles
S6.7-02 Colloidal Two-Dimensional PbS Nanosheets and Ultrathin PbS Nanoplatelets – High Mobility vs. Photoluminescence Properties

15:30 - 16:00 Celso de Mello Donega (*Universiteit Utrecht*), Anne Berends, Ward van der Stam
S6.7-11 Ultrathin Colloidal Binary and Ternary Copper Chalcogenide Nanosheets

16:00 - 16:15 Alejandro Molina-Sánchez (*Institute of Materials Science of the University of Valencia (ICMUV)*)
S6.7-03 Excitonic States in Semiconducting Two-Dimensional Perovskites

16:15 - 16:30 Aniket S. Mule (*Optical Materials Engineering Laboratory, ETH Zurich, 8092 Zurich, Switzerland*), Simon F. Solari, Aurelio A. Rossinelli, Philippe N. Knüsel, Sergio Mazzotti, Marianne Aellen, David J. Norris
S6.7-04 Synthesis and Isolation of Discrete-Growing CdSe Nanocrystals



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Poster Contribution

304	Kelly Brouwer, <u>Serena Busatto</u> (<i>Condensed Matter and Interfaces, Debye Institute for nanomaterials science, Utrecht University</i>), Anne Berends, Celso de Mello Donegá Formation of Ultrathin Colloidal Copper Indium Sulfide Nanosheets by Cation Exchange in Cu _{2-x} S and In ₂ S ₃ Nanosheets
305	Sotirios Christodoulou, Juan I. Climente, Josep Planelles, Rosaria Brescia, Mirko Prato, Beatriz Martín-García, <u>Ali Hossain Khan</u> (<i>Istituto Italiano di Tecnologia, Via Morego 30, 16163 Genova, Italy</i>), Iwan Moreels Widening the Thickness Range of Colloidal CdSe Nanoplatelets with CdCl ₂
317	<u>Toshihiro Nakamura</u> (<i>Hosei University</i>), Jun Otsubo, Nobuyoshi Koshida High-yield Synthesis of Luminescent Colloidal Silicon Nanocrystals from Porous Silicon
332	<u>Johanna van der Bok</u> (<i>Condensed Matter and Interfaces, Debye Institute for nanomaterials science, Utrecht University</i>), Bas Salzmann, Daphne Dekker, Matt Peerlings, Andries Meijerink Spectral Line