

nanoGe Fall Meeting 2018 (FallMeeting18)

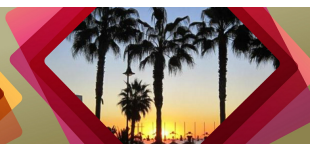
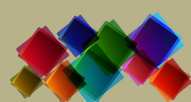
S1 Solar Fuel 18

Torremolinos, Spain, 2018 October 22nd - 24th

Conference Chairs: Shannon Boettcher and Kevin Sivula

Conference Program

October 22nd - Day 1 (Monday)	
Plenary sessions 1 & 2	
09:00 - 09:30 2-K1	<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
09:00 - 09:30 2-K2	<u>Yun Jeong Hwang</u> (<i>Korea Institute of Science and Technology (KIST)</i>), Byoun Koun Min, Hyeong-Suk Oh Electrochemical Conversion of CO ₂ toward Valuable Chemicals for Solar-to-Chemical Conversion Application
SolFuel S1.1	
09:30 - 10:00 S1.1-I1	<u>Alexis Grimaud</u> (<i>Chimie du Solide et de l'Energie, FRE 3677, Collège de France, 75231 Paris Cedex 05, France</i>) Oxygen Evolution Reaction on the Surface of Transition Metal Oxides – Heterogeneous or Homogeneous catalysis?
10:00 - 10:15 S1.1-O1	<u>Shasha Tao</u> , <u>Stephan Wagner</u> , <u>Hannes Radinger</u> , <u>Sven Tengeler</u> , <u>Wolfram Jaegermann</u> , <u>Bernhard Kaiser</u> (<i>Institute of Material Science, Technische Universität Darmstadt, 64287 Darmstadt, Germany</i>) Nickeloxide Nanoparticles and Thin Films as Catalysts for (Photo)Electrochemical Water Splitting: A Surface Science Study
10:15 - 10:30 S1.1-O2	<u>Laia Francas</u> (<i>Imperial College London, Department of Chemistry, South Kensington Campus, London, SW7 2AZ</i>), <u>Sacha Corby</u> , <u>Shababa Selim</u> , <u>Dongho Lee</u> , <u>Mesa Camilo</u> , <u>Robert Godin</u> , <u>Kyoung Shin-Choi</u> , <u>James Durrant</u> Spectroelectrochemical Study of the Catalytic Species on the Ni(Fe)OOH and FeOOH Electrocatalysts
10:30 - 11:00	Coffee Break
SolFuel S1.2	
11:00 - 11:30 S1.2-I1	<u>Tanja Cuk</u> (<i>University of Colorado, Boulder</i>) Resolving Chemical Bond Dynamics at an Electrode Surface: Ramifications for Heterogeneous Catalysis
11:30 - 11:45 S1.2-O1	<u>Sacha Corby</u> (<i>Department of Chemistry, Imperial College London, South Kensington, London, SW7 2AZ, UK</i>), <u>Laia Francas</u> , <u>Shababa Selim</u> , <u>Michael Sachs</u> , <u>Andreas Kafizas</u> , <u>James Durrant</u> Charge Carrier Dynamics in Nanostructured Tungsten Trioxide for Solar Driven Water Oxidation
11:45 - 12:00 S1.2-O2	<u>Annemarie Huijser</u> (<i>MESA+ Institute for Nanotechnology, University of Twente</i>), <u>Qing Pan</u> , <u>David van Duinen</u> , <u>Mads G. Laursen</u> , <u>Amal El Nahas</u> , <u>Pavel Chabera</u> , <u>Qingyu Kong</u> , <u>Xiaoyi Zhang</u> , <u>Kristoffer Haldrup</u> , <u>Wesley R. Browne</u> , <u>Grigory Smolentsev</u> , <u>Jens Uhlig</u> Shedding Light on the Nature of Excited States in a Hydrogen Generating Supramolecular RuPt Catalyst by Ultrafast X-Ray Spectroscopy
12:00 - 12:30 S1.2-O3	<u>Ernest Pastor</u> (<i>Imperial College London, Department of Chemistry, South Kensington Campus, London, SW7 2AZ</i>), <u>Artem Bakulin</u> Ultrafast Electron Localisation and Delocalisation in Photoelectrochemical Cells. Towards Control of Excited-State Transport
12:30 - 14:30	Lunch
SolFuel S1.3	
14:30 - 15:00 S1.3-I1	<u>Vincent ARTERO</u> (<i>Universite Grenoble Alpes</i>) Molecular-Based H ₂ -Evolving Photocathodes



15:00 - 15:30	<u>Menny Shalom</u> (<i>Department of Chemistry, Ben Gurion University of the Negev, Beer Sheba, Israel</i>)
S1.3-O1	Graphitic Carbon Nitride Layers as Light-Harvesting Semiconductors for Photoelectrochemical Cells
15:30 - 15:45	<u>Michael Sachs</u> (<i>Department of Chemistry, Imperial College London, South Kensington, London, SW7 2AZ, UK</i>),
S1.3-O2	Reiner Sebastian Sprick, Drew Pearce, Sam J. Hillman, Adriano Monti, Anne A. Y. Guilbert, Nick J. Brownbill, Stoichko Dimitrov, Frédéric Blanc, Martijn A. Zwiijnenburg, Jenny Nelson, James R. Durrant, Andrew I. Cooper Understanding Hydrogen Evolution Activity of Linear Organic Photocatalysts
15:45 - 16:15	<u>Ferdi Karadas</u> (<i>Bilkent University, Ankara, Turkey</i>), T. Gamze Ulusoy Ghobadi
S1.3-O3	An Earth Abundant Dye-Sensitized Photoanode for Water Oxidation
16:15 - 16:30	<u>Christos Trompoukis</u> (<i>Ghent University, Photonics Research Group, iGent, Technologiepark Zwijnaarde 15, 9000 Ghent, Belgium</i>), Jan-Willem Schüttauf, Tom Bosserez, Ji-Yu Feng, Aimi Abass, Jan Rongé, Roel Baets, Johan Martens
S1.3-O4	Porosity as an Ionic Shortcut: Porous Multi-Junction Thin-Film Silicon Solar Cells for Scalable Solar Water Splitting
16:30 - 16:45	Alba García Sanchez, Patricia Reñones, Carmen García, Elena Alfonos, Laura Collado, Raul Perez Ruiz, Mariam Barawi, Igancio Villar, Marta Liras, Fernando Fresno, <u>Víctor Antonio de la Peña O'Shea</u> (<i>1 Photoactivated Proceses Unit IMDEA Energy Institute</i>)
S1.3-O5	Solar Fuels Productions by Artificial Photosynthesis: From Inorganic Semiconductors to Hybrid Multifunctional Materials

October 23rd - Day 2 (Tuesday)

SolFuel S1.4

09:00 - 09:30	<u>Alexander Cowan</u> (<i>Department of Chemistry, University of Liverpool</i>)
S1.4-I1	Sum-Frequency and Surface Sensitive Spectroscopy of Electrode and Photoelectrode Surfaces
09:30 - 10:00	<u>Nestor Guijarro</u> (<i>Laboratory for Molecular Engineering of Optoelectronic Nanomaterials, Ecole Polytechnique Fédérale de Lausanne, Station 6, CH-1015, Switzerland</i>), Yongpeng Liu, Florian Le Formal, Liang Yao, Kevin Sivula
S1.4-O1	Operando Potential-Sensing at the Semiconductor-Liquid Junctions: Tracking the Surface Energetics and Interfacial Kinetics during Photoelectrosynthetic Reactions
10:00 - 10:15	<u>David E. Starr</u> (<i>Institute for Solar Fuels, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany</i>), Marco Favaro, Fatwa F. Abdi, Marlene Lamers, Michael Kanis, Hendrik Bluhm, Ethan Crumlin, Roel van de Krol
S1.4-O2	Identification and Light-Induced Suppression of Surface States on BiVO ₄ Photanodes
10:15 - 10:30	<u>Farabi Bozheyev</u> (<i>National Laboratory Astana, 53 Kabanbay Batyr St., 010000 Astana, Kazakhstan</i>), Fanxing Xi, Dennis Friedrich, Marat Kaikanov, Alexander Tikhonov, Sebastian Fiechter, Klaus Ellmer
S1.4-O3	Passivation of the Surface of Transition Metal Dichalcogenides with Catalysts for Solar Hydrogen Evolution

10:30 - 11:00 Coffee Break

SolFuel S1.5

11:00 - 11:30	<u>Erwin Reisner</u> (<i>University of Cambridge, UK</i>)
S1.5-I1	Solar-Driven Fuel Synthesis with Hybrid Semiconductor Systems
11:30 - 11:45	Martina Sandroni, Jérôme Fortage, Marie-Noëlle Collomb, Peter Reiss, <u>Dmitry Aldakov</u> (<i>UMR5819 SyMMES CEA-CNRS-UGA CEA-Grenoble INAC/SyMMES 17 rue des Martyrs 38054 GRENOBLE CEDEX 9 FRANCE</i>)
S1.5-O1	Efficient Hydrogen Photoproduction in Water with Hybrid Systems Composed of Quantum Dots and Molecular Catalysts
11:45 - 12:00	<u>Elena Alfonso González</u> (<i>IMDEA Energy Institute</i>), Mengjiao Wang, Mariam Barawi, Luca De Trizio, Liberato Manna, Víctor A. de la Peña O'Shea
S1.5-O2	Characterization of Cu ₂ -xTe Nanocrystals for Photoelectrochemical Cells
12:00 - 12:30	Drialys Cardenas-Morcoso, Miguel Garcia-Tecedor, Seog Joon Yoon, Ivan Mora-Sero, Andres Gualdrón, <u>Sixto Gimenez</u> (<i>Institute of Advanced Materials (INAM), Universitat Jaume I</i>)
S1.5-O3	Photocatalysis with All-Inorganic Perovskite Quantum Dots

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

SolFuel S1.6

- 14:30 - 15:00 **S1.6-I1** Yogesh Surendranath (*Massachusetts Institute of Technology, Cambridge, MA 0213*)
Bridging Molecular and Heterogeneous Electrocatalysis For Solar Fuels Production
- 15:00 - 15:30 **S1.6-O1** Antonio Guerrero (*Institute of Advanced Materials (INAM), Universitat Jaume I*)
Synthesis of Dimensionally Stable and Porous Electrodes for Photoelectrochemical Applications
- 15:30 - 15:45 **S1.6-O3** Silvan Suter (*Laboratory of Renewable Energy Science and Engineering, École Polytechnique Fédérale de Lausanne, Switzerland*), Sophia Haussener
Linking Morphology and Multi-Physical Transport in Porous Copper Electrodes
- 15:45 - 16:15 **S1.6-O2** Nina M. Carretero (*Catalonia Institute for Energy Research, IREC. Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs (Barcelona), Spain.*), Maria D. Hernández-Alonso, Joan Ramon Morante, Teresa Andreu
Bi-Metallic Sn-Pd Catalysts for CO₂ Electroreduction to Formic Acid: Modulation of Overpotential and Stability
- 16:15 - 16:30 **S1.6-O4** magnan helene (*Service de Physique de l'Etat Condensé CEA, CNRS, Université Paris Saclay CEA Saclay, l'orme des merisiers bat 772, 91191 Gif sur Yvette Cedex FRANCE*), stanescu dana, brehin julien, barbier antoine
Unraveling the Role of Ferroelectricity in Solar Water Splitting Improvement
- 16:30 - 16:45 **S1.6-O5** Félix Urbain (*Institut de Recerca en Energia de Catalunya (IREC), Barcelona, Spain*), Nina M. Carretero, Teresa Andreu, María Dolores Hernández Alonso, Joan Ramón Morante
Scalable Production of Syngas from Solar CO₂ Recycling

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

October 24th - Day 3 (Wednesday)

Plenary sessions 3 & 4

Chair: Sandrine Ithurria

- 09:00 - 09:30 **4-K1** Francesca Maria Toma (*Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California 94720, United States*)
A New Portrait of Functional Complex Interfaces for Solar Fuel Devices
- 09:00 - 09:30 **4-K2** Vanessa Wood (*Laboratory for Interfacial Chemistry, ETH Zurich*)
Charge Transport in Nanocrystal Solids

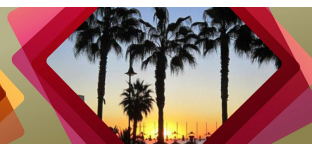
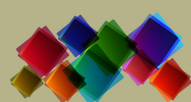
SolFuel S1.7

- 09:30 - 10:00 **S1.7-I1** Jose Ramon Galan-Mascaros (*Institute of Chemical Research of Catalonia (ICIQ), The Barcelona Institute of Science and Technology (BIST), Avinguda Paisos Catalans 16, Tarragona 43007, Catalonia, Spain*)
A-LEAF: A European-Wide Approach Towards Solar Fuels
- 10:00 - 10:30 **S1.7-O1** Marlene Lamers, Marco Favaro, David Starr, Ibbi Ahmet, Wenjie Li, Lydia Wong, Roel van de Krol, Fatwa Abdi (*Institute for Solar Fuels, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Hahn-Meitner-Platz 1, 14109 Berlin, Germany*)
Overcoming the Limitations of BiVO₄ Photoanodes through Anion and Cation Substitution

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

SolFuel S1.8

- 11:00 - 11:30 **S1.8-O1** Frank Osterloh (*University of California at Davis*), Zeqiong Zhao, Renato Gonçalves, Muhammad Huda, Sajib Barman, Emma Willard, Russell Perry, Edaan Byle
Electronic Structure Basis for Enhanced Overall Water Splitting Photocatalysis of Doped Strontium Titanate in Direct Sunlight
- 11:30 - 11:45 **S1.8-O2** Chang-Ming Jiang (*Joint Center for Artificial Photosynthesis and Chemical Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA*), Ian Sharp, Jason Cooper
Electronic Structure of CuFeO₂ Photocathode Studied by Resonant Inelastic X-ray Scattering



11:45 - 12:00 S1.8-O3	<u>Teresa Andreu</u> (<i>Department of Advanced Materials for Energy, Catalonia Institute for Energy Research (IREC), Catalonia, Spain</i>), Sebastian Murcia-López, Qin Shi Surface states in BiVO ₄ photoanodes for water oxidation: tuning the electron trapping process
12:00 - 12:15 S1.8-O4	<u>Moritz Kölbach</u> (<i>Institute for Solar Fuels, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Hahn-Meitner-Platz 1, 14109 Berlin, Germany</i>), Inês Jordão Pereira, Karsten Harbauer, Sean Berglund, Paul Plate, Dennis Friedrich, Roel van de Krol, Fatwa F. Abdi α -SnWO ₄ : A New Promising Photoanode Material for Solar Water Splitting
12:15 - 12:30 S1.8-O5	<u>PengYi Tang</u> (<i>Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Campus UAB, Bellaterra, 08193 Barcelona, Catalonia, Spain</i>), HaiBing Xie, LiJuan Han, Carles Ros, Marti Biset Peiro, José Ramón Galán-Mascarós, Teresa Andreu, Joan Ramon Morante, Jordi Arbiol Bottom-up Engineering of Hematite Nanowire Heterostructures for Photoelectrochemical Water Splitting

Poster Contribution

106	<u>Teresa Andreu</u> (<i>Department of Advanced Materials for Energy, Catalonia Institute for Energy Research (IREC), Catalonia, Spain</i>), Sebastian Murcia-López, Carles Ros, Nina Carretero, Joan R. Morante charge transfer kinetics of photoelectrodes for solar energy storage
109	<u>Fanxing Xi</u> (<i>Helmholtz Zentrum Berlin für Materialien und Energie GmbH</i>), Farabi Bozheyev, Fatwa F. Abdi, Peter Bogdanoff, Klaus Ellmer, Sebastian Fiechter (NH ₄) ₂ Mo ₃ S ₁₃ as a highly efficient hydrogen evolving catalyst deposited on (001)-textured WSe ₂ photocathodes
112	<u>Katsushi Fujii</u> (<i>RIKEN, Center for Advanced Photonics</i>), Daiji Yamashita, Kayo Koike, Katsuhiko Tsuno, Masakazu Sugiyama, Takayo Ogawa, Satoshi Wada Concepts and Preliminary Operation of kW-size Power Supply System with Energy Storage by Water Split Hydrogen Generation
123	<u>Mariam Barawi Moran</u> (<i>Institute IMDEA Energy</i>), Alberto González, Elena Alfonso, Alba García, Carmen López-Calixto, Marta Liras, Víctor. A de la Peña O' Shea Design and Development of a Multilayer Photoelectrode Composed of TiO ₂ Nanocrystals and a New Nanostructured Conjugate Porous Polymer with Advanced Photoelectrochemical Properties
127	<u>Yongpeng Liu</u> (<i>Laboratory for Molecular Engineering of Optoelectronic Nanomaterials (LIMNO), École Polytechnique Fédérale de Lausanne (EPFL), Station 6, 1015 Lausanne, Switzerland</i>), Florian Le Formal, Florent Boudoire, Kevin Sivula, Nestor Guijarro Uncovering the Interfacial Carrier Dynamics in CuInGaS ₂ Photocathodes during Hydrogen Production
241	<u>Idan Hod</u> (<i>Department of Chemistry, Ben Gurion University of the Negev, Beer Sheva, Israel</i>), Raya Ifraemov Metal-Organic Framework Based Anode and Cathode in an Hydrogen Evolving Photo-Electrochemical Cell