

## SYMPOSIUM I

Sustainable approaches for renewable energy conversion  
to fuels and chemicals

*Symposium Organizers :*

Ann MAGNUSON, Department of Chemistry - Ångström Laboratory

Bert M. WECKHUYSEN, Utrecht University

Francisco FABREGAT-SANTIAGO, Institute of Advanced Materials  
(INAM) Universitat Jaume I

Frédéric CHANDEZON, IRIG Dir



Monday may 30

08:45	<b>Welcome and Introduction to the Symposium</b>		15:45	<b>Metallochaperone-like effect of a hydrophobic ligand in FeOx/BiVO4 nanohybrid formation for photoelectrochemical water oxidation</b>	I 3.4
	<b>Artificial Photosynthesis I : Maria Wächtler</b>			Timea Benkó (1), Shaohua Shen (2), Miklós Németh (1), Ákos Szamosvölgyi (3), András Sápi (3), György Sáfrán (4), Sahir M. Al-Zurajji (1), József Sándor Pap (1) (1) Centre for Energy Research, Surface Chemistry and Catalysis Department, 29-33 Konkoly-Thege Street, H-1121 Budapest, Hungary, (2) International Research Center for Renewable Energy (IRCRC), State Key Laboratory of Multiphase Flow in Power Engineering (MFPE), Xi'an Jiaotong University, Xi'an, Shaanxi 710049, China, (3) University of Szeged, Interdisciplinary Excellence Centre, Department of Applied and Environmental Chemistry, H-6720, Rerrich Béla tér 1, Szeged, Hungary, (4) Centre for Energy Research, Institute of Technical Physics and Materials Science, Thin Film Physics Department, Konkoly-Thege street 29-33, 1121 Budapest, Hungary	
09:00	<b>INV Kinetic challenges for solar driven fuel synthesis - matching photoexcited state and catalysis timescales</b>	I 1.1			
	James Durrant Department of Chemistry, Centre for Processable Electronics, Imperial College London, London W12 0BZ, U.K. and SPECIFIC IKC, College of Engineering, University of Swansea, Swansea, U.K. E-mail: j.durrant@imperial.ac.uk				
09:30	<b>INV Molecular Mechanisms of Artificial Photosynthesis</b>	I 1.2	16:00	<b>Role of anion etching and heteroatom incorporation in cobalt silicate precatalyst for improved OER</b>	I 3.5
	Leif Hammarström Department of Chemistry – Ångström Laboratory, Uppsala University, Box 523, S75120 Uppsala, Sweden			Dr. Debashrita Sarkar <sup>1,2</sup> , Dr. Sagar Ganguli <sup>1,3</sup> , Ayan Mondal <sup>1</sup> , Prof. Venkataramanan Mahalingam <sup>1</sup> 1- Indian Institute of Science Education and Research Kolkata, India 2- Université de Paris, France 3- Uppsala University, Sweden	
10:00	<b>Oligoethylene glycol side chains increase charge generation in organic semiconductor nanoparticles photocatalyst</b>	I 1.3	16:15	<b>Discussion</b>	
	Kosco, J. (1), Gonzalez-Carrero, S.* (2), Howells, C. T. (1), Zhang, W. (1), Moser, M. (3), Sheelamantula, R. (1), Zhao, L. (1), Willner, B. (3), Hidalgo, T. C. (1), Faber, H. (1), Purushothaman, B. (1), Sachs, M. (2), Cha, H. (2), Sougrat, R. (1), Anthopoulos, T. D. (1), Inal, S. (1), Durrant, J. R. (2), McCulloch, I. (1,3) (1) King Abdullah University of Science and Technology (KAUST), Thuwal, Kingdom of Saudi Arabia (2) Department of Chemistry and Centre for Processable Electronics, Imperial College London, London, UK* (3) Department of Chemistry University of Oxford, Oxford, UK		16:30	<b>Coffee</b>	
10:30	<b>Discussion</b>			<b>I : Francisco Fabregat-Santiago &amp; Ann Magnuson</b>	
10:45	<b>Coffee</b>		16:45	<b>Energy Generation From Active Heteroatom (N and P) Based Porous Carbon: Hydrazine Oxidation Reaction</b>	I P1.1
	<b>Artificial Photosynthesis II : Leif Hammarström</b>			Nisha Dhiman, Kumud Malika Tripathi, Paritosh Mohanty Nisha Dhiman: Indian Institute of Technology, Roorkee and Indian Institute of Petroleum and Energy, Visakhapatnam Paritosh Mohanty: Indian Institute of Technology, Roorkee Kumud Malika Tripathi: Indian Institute of Petroleum and Energy, Visakhapatnam	
11:00	<b>INV Molecular approaches to artificial photosynthesis and solar fuel production</b>	I 2.1	16:45	<b>Enhanced elastocaloric cooling performances in gradient nanograined NiTi shape memory alloy</b>	I P1.2
	Murielle Chavarot-Kerlidou LCBM, Université Grenoble Alpes/CNRS/CEA Grenoble, France			Junyu Chen State Key Laboratory of Tribology, Department of Mechanical Engineering, Tsinghua University, Beijing 100084, China	
11:30	<b>Photosynthesis re-wired on the pico-second timescale</b>	I 2.2	16:45	<b>A polyphenolic interface layered Al-fluorinated organic compounds for improved combustion properties for energetic applications</b>	I P1.3
	Laura T. Wey <sup>2+</sup> , Tomi K. Baikie <sup>1+</sup> , Hitesh Medipally <sup>3</sup> , Erwin Reisner <sup>4</sup> , Marc M. Nowaczyk <sup>3</sup> , Richard H. Friend <sup>1</sup> , Christopher J. Howe <sup>2*</sup> , Christoph Schnedermann <sup>1*</sup> , Akshay Rao <sup>1*</sup> , Jenny Z. Zhang <sup>4*</sup> 1 - Cavendish Laboratory, University of Cambridge, J. J. Thomson Avenue, Cambridge, CB3 0HE, UK 2 - Department of Biochemistry, University of Cambridge, Tennis Court Road, Cambridge, CB2 1QW, UK 3 - Plant Biochemistry, Ruhr-Universität Bochum, Universitätsstrasse 150, 44780 Bochum, Germany 4 - Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge, CB1 2EW, UK			Virendrakumar G. Deonikar, Hern Kim* Lead presenter: Virendrakumar G. Deonikar, Email: virendradeonikar@gmail.com *Corresponding author: Prof. Hern Kim, Email: hernkim@mju.ac.kr Environmental Waste Recycle Institute, Department of Energy Science and Technology, Myongji University, Yongin, Gyeonggi-do 17058, Republic of Korea	
11:45	<b>Organic Polymer Dots for Photocatalysis</b>	I 2.3	16:45	<b>Catalytic performance of ionic liquid on the carboxylation of glycerol to glycerol carbonate with carbon dioxide</b>	I P1.4
	Haining Tian Department of Chemistry - Ångström Lab., Uppsala University, Box 523, 75120 Uppsala, Sweden			Atul A. Pawar, Hern Kim* Myongji University Yongin, Republic of Korea.	
12:00	<b>Discussion</b>		16:45	<b>Transition metal-carbon composites as an efficient electrocatalyst for nitrogen reduction to ammonia</b>	I P1.5
12:15	<b>Lunch</b>			Rajendra B. Mujmule, Hern Kim* Department of Energy Science and Technology / Environmental Waste Recycle Institute, Myongji University	
15:15	<b>Perovskite-Type Oxynitride Nanofibers Performing Photocatalytic Oxygen and Hydrogen Generation</b>	I 3.2	16:45	<b>Tuning the properties of MnO2 OER electrocatalysts: influence of the substrate and of surface functionalization</b>	I P1.6
	Hofmann, A.* , Weiss, M., Timm, J., Marschall, R. University of Bayreuth, Universitätsstr. 30, 95447 Bayreuth, Germany * lead presenter			Alberto Gasparotto,*, a,b Lorenzo Bigiani, a Chiara Maccato, a,b Cinzia Sada, c Johan Verbeeck, d Teresa Andreu, e, f Juan Ramón Morante, e, f Davide Barreca, b a. Department of Chemical Sciences, Padova University and INSTM, 35131 Padova, Italy b. CNR-ICMATE and INSTM, Department of Chemical Sciences, Padova University, 35131 Padova, Italy c. Department of Physics and Astronomy, Padova University and INSTM, 35131 Padova, Italy d. EMAT and NANOlaboratory Center of Excellence, University of Antwerp, 2020 Antwerpen, Belgium e. Universitat de Barcelona (UB), 08028 Barcelona, Spain f. Catalonia Institute for Energy Research - IREC, Sant Adrià de Besòs, 08930 Barcelona, Spain	
15:30	<b>Mesoporous High-Entropy Oxide Thin Film Electrodes: Electrocatalytic Water Oxidation on High-Surface Area Spinel</b>	I 3.3			
	Marcus Einert*, Maximilian Mellin, Niloufar Bahadorani, Christian Dietz, Stefan Lauterbach, and Jan P. Hofmann* Surface Science Laboratory, Department of Materials and Earth Sciences, Technical University of Darmstadt, Otto-Berndt-Strasse 3, 64287 Darmstadt, Germany Institute of Materials Science, Physics of Surfaces, Technical University of Darmstadt, Alarich-Weiss-Strasse 2, 64287 Darmstadt, Germany Institute for Applied Geosciences, Geomaterial Science, Technical University of Darmstadt, Schnittspahnstrasse 9, 64287 Darmstadt, Germany				

16:45	<b>Synthesis of metal@carbon nanostructured model electrodes and studies of their electrochemical response at the nanoscale</b> Brazel, L. (1),* Brunet Cabré, M.(1), Schroeder, C.(1), Nolan, H.(1), McKelvey, K.(1) (2), Colavita, P.E.(1) (1) School of Chemistry, Trinity College Dublin, College Green, Dublin 2, Ireland, (2) School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington 6012, New Zealand	I P1.7
16:45	<b>Improving the heat-electricity conversion performance of thermoelectric generators based on evaporative cooling technology</b> Liang Jun Zheng, Dong Hee Kang, Min Liang Wang, Hyun Wook Kang * Department of Mechanical Engineering, Chonnam National University, Korea	I P1.8
16:45	<b>Electrochemical study of copper oxides heterostructures as photocatalysts for CO2 conversion to formic acid</b> Bălan, A.E. (1), Stamatina, S.N. (1), Iacob, M.T. (1,2), Diac, C.*(1), Mitrea, B.C. (1,2), Esmail Jalali Lavasani (1,2), Stamatina, I. (1) (1) 3Nano-SAE Research Centre, PO Box MG-38, Bucharest – Magurele, Romania (2) University of Bucharest, Faculty of Physics, PO Box MG-38, Bucharest – Magurele, Romania	I P1.9
16:45	<b>The Influence of Cu, Ag, and TiO2 Nanoparticles on Plants Photosynthesis Process</b> Mitrea B. C. (1,2), Nichita C. (1,2), Diac C. (1), Dobrica B.(1), Stamatina I. (1) (1) 3Nano-SAE Research Centre, PO Box MG-38, Bucharest – Magurele, Romania (2) University of Bucharest, Faculty of Physics, ICUB, PO Box MG-38, Bucharest – Romania	I P1.10
16:45	<b>Effect of Noble Metal Dope into 2D Layered Perovskites for Photocatalytic CO2 Reduction</b> Yilmaz, B.*(1), Unal, U.(1) (1)Koc Univesity, Turkey	I P1.11
16:45	<b>Graphene/TiO2 Photocatalysts Synthesis By Laser Pyrolysis For Ethylene Production</b> Juliette Karpel1,2, Pierre Lonchambon1, Frédéric Dappozze2, Nathalie Herlin1, Chantal Guillard2 (1) University of Paris-Saclay, CEA,CNRS, NIMBE, Gif-sur-Yvette Cedex, France. (2) University of Lyon 1, IRCÉLYON, CNRS, Villeurbanne, France.	I P1.12

Tuesday may 31

CO2 reduction I : Marc Robert

09:00	<b>INV Unveiling the Dynamic Behavior of CO2 Electrocatalysts through in situ Microscopy and Operando Spectroscopy</b> Beatriz Roldan Cuenya Department of Interface Science, Fritz-Haber-Institute of the Max Planck Society, Berlin	I 4.1
09:30	<b>INV Probing CO2 reduction dynamics with time-resolved Raman spectroscopy</b> Ward van der Stam Inorganic Chemistry and Catalysis, Utrecht University, The Netherlands. Email: w.vanderstam@uu.nl	I 4.2
10:00	<b>Shaping of mesoporous CeO2 powder into mm-sized catalyst supports for CO2 methanation</b> Elena Martín Morales, Andreína Alarcón, Elena Xuriguera, Jordi Guilera Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs, Spain, Escuela Superior Politécnica del Litoral, ESPOL, Facultad de Ingeniería en Ciencias de la Tierra, Campus Gustavo Galindo Km.30.5 Vía Perimetral, P.O. Box 09-01-5863, Guayaquil, Ecuador, DIOPMA, Departament de Ciència de Materials i Química Física, Facultat de Química, Universitat de Barcelona, Martí i Franquès 1-11, 08028, Barcelona, Spain, Chemical Engineering and Analytical Chemistry Department, University of Barcelona, Martí i Franquès 1-11, 08028 Barcelona, Spain	I 4.3
10:15	<b>Nanoscale properties of colloidal CeO2: Synthesis, lanthanide doping and applications</b> Hervés-Carrete, C. (1)*, Bastús, N.G. (1), Puentes, V.F. (1, 2, 3) (1) Catalan Institute of Nanoscience and Nanotechnology (ICN2), Spain (2) Vall d'Hebron Institut de Recerca (VHIR), Spain (3) Institució Catalana de Recerca i Estudis Avançats (ICREA), Spain	I 4.4
10:30	<b>Discussion</b>	
10:45	<b>Coffee</b>	

CO2 reduction II : Debashrita Sarkar

11:00	<b>INV Hybridization of molecular and conductive/semi-conductive porous materials for CO2 catalytic reduction</b> Marc Robert Université de Paris, Laboratoire d'Electrochimie Moléculaire, CNRS, F-75006 Paris, France	I 5.1
11:30	<b>Direct-synthesis of AgxCu100-x bimetallic nanoparticles on p-Si supports for the photoelectrochemical reduction of CO2</b> Harsh Chaliyawala1, Stephane Bastide1, Diane Muller-Bouvet1, Tarik Bourouina2, Frédéric Marty2, Abir Rezgui2, S. Le Gall3, Encarnacion Torralba1 * (1) Univ Paris Est Creteil, CNRS, Institut de Chimie et des Matériaux Paris-Est (ICMPE), UMR 7182, 2 rue Henri Dunant, 94320 Thiais, France (2) ESYCOM - Electronique, Systèmes de communication et Microsystèmes (Université de Paris-Est - Marne-la-Vallée) Cité Descartes, 77454 Marne-la-Vallée Cedex 2, France (3) Group of electrical engineering Paris, UMR CNRS 8507, Centrale Supélec, (Univ. Paris Sud) 91192 Gif sur Yvette CEDEX, France	I 5.2
11:45	<b>Electrochemical CO2 conversion to nanocarbons in Li-K-Na molten salt electrolyte: tuning the nanocarbon morphology</b> Giannakopoulou T.*, Todorova N., Vagenas M., Plakantonaki N., Papailias I., Trapalis C. Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos", Greece	I 5.3
12:00	<b>Discussion</b>	
12:15	<b>Lunch and Plenary</b>	

CO2 reduction III : Joanna Kargul

15:00	<b>INV Alternative fuels and chemicals – with materials science from renewable electricity, CO2 and water up to the final product</b> Dr. Carina Faber, Dr. Hélène Lepaumier, Jim Griepkoven, Dr. Jan Mertens ENGIE Laborelec, Linkebeek, Belgium, ENGIE Laborelec, Linkebeek, Belgium, ENGIE Laborelec, Linkebeek, Belgium, ENGIE S.A., Paris, France,	I 6.1
-------	---	-------

15:30	<b>High-rate CO<sub>2</sub> electrocatalytic reduction to formate with InP colloidal quantum dots derived catalysts</b>	I 6.2
	Ivan Grigioni, Edward H. Sargent, Elena Sellia Dipartimento di Chimica, Università degli Studi di Milano, Via Golgi 19, 20133 Milano, Italy Department of Electrical and Computer Engineering, University of Toronto, Ontario, Canada, Department of Electrical and Computer Engineering, University of Toronto, Ontario, Canada, Dipartimento di Chimica, Università degli Studi di Milano, Via Golgi 19, 20133 Milano, Italy	
15:45	<b>CO<sub>2</sub> reduction using nanostructured metal oxide/catalyst hybrid layers assembled at photoelectrodes</b>	I 6.3
	Julian Guerrero[1][2], Nathanaelle Schneider[2], Daniel Lincot[2], Negar Naghavi[2], Marc Robert[1][3] [1] J. Guerrero, Prof. M. Robert Laboratoire d'Electrochimie Moléculaire, Université de Paris, CNRS, F-75006 Paris, France [2] J. Guerrero, N. Schneider, N. Naghavi, Prof. D. Lincot Institut Photovoltaïque d'Île-de-France (IPVF), CNRS, UMR 9006, 91120 Palaiseau, France [c] Prof. M. Robert Institut Universitaire de France (IUF), F-75005, Paris, France	
16:00	<b>Effect of noble metal doping on Layered CsCa<sub>2</sub>Ta<sub>3</sub>O<sub>10</sub> for photocatalytic conversion of CO<sub>2</sub> into valuable fuels</b>	I 6.4
	Tugba Yalcin (1,2), Ugur Unal (1) (1) Koc University, Materials Science and Engineering Dept. Rumelifeneri yolu Sarıyer Istanbul Turkey , (2) Arçelik, Turkey	
16:15	<b>Discussion</b>	
16:30	<b>Coffee</b>	
	<b>Characterization and Modeling I : Bert Weckhuysen</b>	
16:45	<b>INV Recent Insights on Photoelectrochemical Interfaces from XPS Studies</b>	I 7.1
	Roel van de Krol 1. Institute for Solar Fuels, Helmholtz-Zentrum Berlin für Materialien und Energie, 14109 Berlin, Germany. Email: roel.vandekrol@helmholtz-berlin.de 2. Institut für Chemie, Technische Universität Berlin, Berlin, Germany	
17:15	<b>Bifunctional earth-abundant catalysts combined with solar cells for solar to hydrogen fuel production</b>	I 7.2
	M.G. Méndez-Medrano,1 Nicolas Loones,1 Frederique Donsanti,1 Alexandre Blaizot,1 Negar Naghavi,1,2 1 IPVF Institut Photovoltaïque d'Île-de France, 91128 Palaiseau, France. 2 CNRS- Institut Photovoltaïque d'Île-de France, UMR 9006 , 91128 Palaiseau, France,	
17:30	<b>Superior overall water splitting performances of electroless deposited Ni-P films</b>	I 7.3
	Sergio Battiato, Luca Bruno, Antonio Terrasi, Salvo Mirabella Dipartimento di Fisica e Astronomia "Ettore Majorana" and IMM-CNR, via S. Sofia 64, 95123, Catania, Italy	
17:45	<b>Hydrogen Evolution Reaction catalysed by low-cost synthesized WO<sub>3</sub> nanorods</b>	I 7.4
	G. Mineo1-2, M. Scuderi3, E. Bruno1-2, S. Mirabella1-2 1 Dipartimento di Fisica e Astronomia "Ettore Majorana", Università degli Studi di Catania, via S. Sofia 64, 95123 Catania, Italy, 2 CNR-IMM (Università di Catania), via S. Sofia 64, 95123 Catania, Italy, 3 IMM-CNR, VIII strada 5, 95121 Catania, Italy,	
18:00	<b>Discussion</b>	

Wednesday June 1

**Bioconversion & Synthesis of added value products I : Ann Magnuson**

09:00	<b>INV Rational design of bio-organic interfaces for improved efficiency of photosystem I-based solar converting nanodevices</b>	I 8.1
	Joanna Kargul Solar Fuels Laboratory, Centre of New Technologies, University of Warsaw, Banacha 2C, 02-097 Warsaw, Poland	
09:30	<b>INV Bioinspired nonadiabatic principles for artificial photosynthesis with high yield</b>	I 8.2
	Huub de Groot Leiden Institute of Chemistry, Leiden University, The Netherlands	
10:15	<b>Development of Ru-Carbon Electrocatalysts for the Electrochemical Nitrogen Reduction Reaction</b>	I 8.3
	Dario Formenti (1),* Yannik Kohlhaas (2), Zhenglin Zhuang (1), Xin Wei (1), Maria Meledina (3), Matthias Wessling (2), Robert Keller (2), Joachim Mayer (3), Ulrich Simon (1) (1) Institute of Inorganic Chemistry – RWTH Aachen University, Germany, (2) Chemical Process Engineering – RWTH Aachen University, Germany, (3) Central Facility for Electron Microscopy – RWTH Aachen University, Germany	
10:30	<b>What makes lithium unique in its ability to reduce nitrogen to ammonia?</b>	I 8.4
	Ifan E. L. Stephens Department of Materials, Imperial College London	
10:45	<b>Discussion</b>	

**Bioconversion & Synthesis of added value products II : Ifan Stephens**

11:00	<b>INV Electrosynthesis with molecular catalysts immobilized on conducting surfaces via host-guest interactions</b>	I 9.1
	David Tilley University of Zurich	
11:30	<b>Alternative generation of ammonia via nitrate and N<sub>2</sub> reduction through electrochemical routes</b>	I 9.2
	Sebastian Murcia-Lopez,1 Marcelo E. Chavez,1 Juan R. Morante 1,2 1. Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, Sant Adrià de Besòs, 08930, Spain 2. University of Barcelona (UB), Martí i Franquès 1, Barcelona, 08020, Spain	
11:45	<b>Reforming of Soluble Biomass and Plastic Derived Waste using a Bias-Free Cu<sub>30</sub>Pd<sub>70</sub>perovskitePt Photoelectrochemical Device</b>	I 9.3
	Subhajt Bhattacharjee, Virgil Andrei, Chanon Pornrungrroj, Motiar Rahaman, Christian M. Pichler and Erwin Reisner* Yusuf Hamied Department of Chemistry, University of Cambridge, Lensfield Road, Cambridge CB2 1EW, United Kingdom.	
12:00	<b>Discussion</b>	
12:15	<b>Lunch and Plenary</b>	

**Bioconversion & Synthesis of added value products III : David Tilley**

15:00	<b>INV Photo- and electro-catalyst development: carbon nitride and NiFe-oxide for catalytic oxidation of organic molecules to value-add</b>	I 10.1
	Menny Shalom Department of Chemistry, Ben-Gurion University of the Negev, Beer-Sheva, Israel	
15:30	<b>Co-based bimetallic catalysts for the production of hydrocarbons (C<sub>2</sub>-C<sub>4</sub>) via the direct hydrogenation of CO<sub>2</sub> and CO.</b>	I 10.2
	A. Alarcón 1, O. Palma1, E. Martínez1, M. Biset1, T. Andreu2, J. Guilera1 1. Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930 Sant Adrià de Besòs, Spain 2. Departament de Ciència de Materials i Química Física, Universitat de Barcelona, Martí i Franquès, 1, Barcelona 08028, Spain	
15:45	<b>Study of the electrochemical hydrogenation of nitrobenzene in Cu and CuPd electrodes</b>	I 10.3
	Carvajal, D* (1), Arcas, R (1), Mesa, C (1), Giménez, S (1), Fabregat-Santiago, F (1), Mas-Marzá, E (1). (1) Group of Advances Materials and Energy, Institute of Advanced Materials, Universitat Jaime I, Spain.	

16:00	<b>Optimization of electrochemical conditions for Hydrogen storage in the GO lattice</b> Nina M. Carretero*, S. Murcia*, J. R. Morante*+ * IREC, Catalonia Institute for Energy Research, Sant Adrià del Besòs, 08930, Spain, + Dept. Enginyeries: Electronica, Universitat de Barcelona, Barcelona, 08028, Spain	I 10.4	16:45	<b>Synthesis and Development of Thin-film Catalyst Materials for Electrolysis</b> Muhammad Sadaf Hussain, Faria Rafique, Dr Imran Din Institute of Chemistry, University of the Punjab Lahore, Pakistan	I P2.10
16:15	<b>Discussion</b>		16:45	<b>Investigation of the photoelectrochemical hydrogen evolution reaction on exfoliated SnSe electrodes</b> Qianqian Ba, Péter S Tóth, Csaba Janáky Department of Physical Chemistry and Materials Science, Interdisciplinary Excellence Center, University of Szeged, Rerrich Sq. 1, Szeged, 6720, Hungary	I P2.11
16:30	<b>Coffee</b>		16:45	<b>Effect of Noble Metal Doping to Layered KCa2NaNb4O13 on Hydrogen Evolution Reaction</b> Demir, A.B.*(1), Unal, U(2) (1) Koc University, Turkey	I P2.12
	<b>II : Bert Weckhuysen &amp; Frederic Chandezon</b>		16:45	<b>Cobalt iron oxyhydroxide electrocatalyst for water oxidation obtained by in-situ transformation of phosphides</b> María Isabel Díez García, Guillem Montaña, Marc Botifoll, Andreu Cabot, Jordi Arbiol, Mohammad Qamar, Joan Ramon Morante María Isabel Díez-García,1 Guillem Montaña,1 Marc Botifoll,2 Andreu Cabot,1,3 Jordi Arbiol,2,3 Mohammad Qamar,4 Joan Ramon Morante1 1 Catalonia Institute for Energy Research (IREC) Jardins de les Dones de Negre 1, Sant Adrià de Besòs, Spain 2 Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC and BIST, Campus UAB, Bellaterra, 08193 Barcelona, Catalonia, Spain 3 ICREA, Pg. Lluís Companys 23, 08010 Barcelona, Catalonia, Spain 4 Interdisciplinary Research Center for Hydrogen and Energy Storage, King Fahd University of Petroleum and Minerals, Dhahran, 31261, Saudi Arabia	I P2.14
16:45	<b>NiO nanoparticles obtained by pulsed laser ablation in liquid for oxygen evolution reaction</b> V. Iacono (1,2), L. Bruno (1,2), E. Bruno (1,2), F. Ruffino (1,2), S. Mirabella (1,2) (1) Dipartimento di Fisica e Astronomia "Ettore Majorana", Università di Catania, via S. Sofia 64, 95123 Catania, Italy, (2) CNR-IMM (Catania Università), via S. Sofia 64, 95123 Catania, Italy,	I P2.1			
16:45	<b>Tuning oxygen evolution performance via A-site Ag+ doping in SrCo0.75Fe0.25O3 perovskite</b> Ziwei Huo.*(1) , Dongsheng Geng.*(1). (1)Beijing Advanced Innovation Center for Materials Genome Engineering, School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing 100083, China * lead presenter	I P2.2			
16:45	<b>Plasma-assisted fabrication of Mn2O3-based electrocatalysts on Ni foam substrates for the oxygen evolution reaction</b> Davide Barreca,a,* Chiara Maccato,a,b Lorenzo Bigiani,b Teresa Andreu,c,d Alberto Gasparotto,a,b Cinzia Sada,e Evgeny Modin,f Oleg I. Lebedev,g Juan Ramon Morante.c,d a. CNR-ICMATE and INSTM, Department of Chemical Sciences, Padova University, 35131 Padova, Italy b. Department of Chemical Sciences, Padova University and INSTM, 35131 Padova, Italy c. IREC, Catalonia Institute for Energy Research, 08930 Sant Adrià de Besòs, Barcelona, Catalonia, Spain d. Universitat de Barcelona (UB), 08028 Barcelona, Spain e. Department of Physics and Astronomy, Padova University and INSTM, 35131 Padova, Italy f. CIC nanoGUNE BRTA, 20018 Donostia - San Sebastian, Spain g. Laboratoire CRISMAT, ENSICAEN UMR6508, 14050 Caen Cedex 4, France	I P2.3	18:00	<b>E-MRS EU-40 Materials Prize &amp; MRS Mid-Career Researcher Award Presentations</b>	
16:45	<b>Enhanced Electrocatalytic Intrinsic Activity of NiO Microflowers on Graphene Paper for Oxygen Evolution Reaction</b> Bruno, L.*(1,2), Scuderi, M.(3), Priolo, F.(1,2), Falciola, L. (4) & Mirabella, S.(1,2) (1) Dipartimento di Fisica e Astronomia "Ettore Majorana", Università di Catania, via S. Sofia 64, 95123 Catania, Italy, (2) CNR-IMM, via S. Sofia 64, 95123 Catania, Italy, (3) CNR-IMM, VIII strada 5, 95121 Catania, Italy, (4) Dipartimento di Scienze Chimiche, Università degli Studi di Catania, viale Andrea Doria 8, 95123, Catania, Italy.	I P2.4			
16:45	<b>Modifying the Electron-Trapping Process at the BiVO4 Surface States via the TiO2 Overlayer for Enhanced Water Oxidation</b> Usman, E.*(1),(2), Barzgar Vishlaghi, M.(1),(2), Kahraman, A.(1),(2), Solati, N.(1),(2), Kaya, S.(1),(2),(3) (1) Materials Science and Engineering, Koc University, Turkey, (2) Koc University Tupras Energy Center (KUTEM), Turkey, (3) Department of Chemistry, Koc University, Turkey, * lead presenter	I P2.5			
16:45	<b>Plasma-Assisted Synthesis of Co3O4-Based Electrocatalysts on Ni Foam Substrates for the Oxygen Evolution Reaction</b> Chiara Maccato, Lorenzo Bigiani, Leonardo Girardi, Alberto Gasparotto, Oleg I. Lebedev, Evgeny Modin, Davide Barreca, Gian Andrea Rizzi L. Bigiani, L. Girardi, Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy, Chiara Maccato, Alberto Gasparotto, Gian Andrea Rizzi, Department of Chemical Sciences, Padova University, CNR-ICMATE and INSTM, Padova 35131, Italy, Davide Barreca, CNR-ICMATE, INSTM and Department of Chemical Sciences, Padova University, 35131, Padova, Italy, Oleg I. Lebedev, Laboratoire CRISMAT UMR 6508 CNRS/ENSICAEN/UCBN, Caen Cedex 4 14050, France, Evgeny Modin, CIC nanoGUNE BRTA, Donostia, San Sebastian 20018, Spain	I P2.6			
16:45	<b>Kinetics of Active Oxide Species Derived from Metallic Nickel Surface for Efficient Electrocatalytic Water Oxidation</b> Yimeng Ma College of Chemistry and Chemical Engineering, Donghua University, Shanghai, 201620, China	I P2.7			

## Water Splitting I : Murielle Chavarot-Kelidou

- 09:00 **INV (Photo)electrochemical Water Splitting Catalyzed by Materials with Well Defined Active Site Structures** I 11.1  
Licheng Sun  
1 Center of Artificial Photosynthesis for Solar Fuels, School of Science, Westlake University, 310024 Hangzhou, China 2 Department of Chemistry, KTH Royal Institute of Technology, 10044 Stockholm, Sweden
- 09:30 **INV Molecular anodes for green and sustainable energy applications** I 11.2  
Antoni Llobet  
Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST), Av. Paisos Catalans 16, E-43007 Tarragona, Spain and Departament de Química Universitat Autònoma de Barcelona, Cerdanyola del Vallès, E-08193 Barcelona, Spain. E-mail: allobet@iciq.cat
- 10:00 **Core shell nanoparticles: a catalyst for the oxygen evolution reaction** I 11.3  
Lisa Royer, Antoine Bonnefont, Benoit Pichon, Elena Savinova  
Lisa Royer: Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé, UMR 7515, CNRS-University of Strasbourg, 67087 Strasbourg Cedex 2, France, Benoit Pichon: Institut de Physique et de Chimie des Matériaux de Strasbourg, UMR 7504, CNRS-University of Strasbourg, 67034 Strasbourg Cedex 2, France, Bonnefont Antoine, Institut de Chimie de Strasbourg, UMR 7177 CNRS-University of Strasbourg, 67070, Strasbourg, France, Elena Savinova: Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé, UMR 7515, CNRS-University of Strasbourg, 67087 Strasbourg Cedex 2, France
- 10:15 **Development of Highly Efficient Self-Supported Transition Metal Based Catalysts for Water Splitting** I 11.4  
Faria Rafique, Dr Habib ur Rehman, Dr. Joe Briscoe  
Syed Babar Ali School of Science and Engineering, LUMS - Lahore University of Management Sciences School of Engineering and Materials Science, Queen Mary University of London
- 10:30 **Discussion**
- 10:45 **Coffee**

## Water Splitting II : Toni Llobet

- 11:00 **INV Water splitting using wired perovskite tandem solar cells and molecular catalysts.** I 12.1  
Yuanyuan Shi 1, Tsung-Yu Hsieh 1, Md Asmaul Hoque 1, Werther Cambarau 1, Stéphanie Narbey 2, Carolina Gimbert-Suriñach 1, Emilio Palomares 1 3, Mario Lanza 4, Antoni Llobet 1 5  
1 Institute of Chemical Research of Catalonia (ICIQ), Barcelona Institute of Science and Technology (BIST), Avinguda Països Catalans, 16, 43007 Tarragona, Spain. 2 Solaronix S.A., Rue de l'Ouriette 129, CH-1170 Aubonne, Switzerland. 3 ICREA, Passeig Lluís Companys 23, 08010 Barcelona, Spain. 4 Physical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), 23955-6900 Thuwal, Saudi Arabia. 5 Departament de Química, Universitat Autònoma de Barcelona (UAB), 08193 Cerdanyola del Vallès, Barcelona, Spain.
- 11:30 **Water splitting performance of selenium based Chevrel phase: CoW6Se8** I 12.2  
Gencer, A.\* (1), Surucu, G. (2),(3), Ozel, F. (4).  
(1) Karamanoglu Mehmetbey University, Department of Physics, Karaman, Turkey, (2) Middle East Technical University, Department of Physics, Ankara, Turkey, (3) Ahi Evran University, Department of Electric and Energy, Kirsehir, Turkey, (4) Karamanoglu Mehmetbey University, Department of Metallurgy and Materials Engineering, Karaman, Turkey,
- 11:45 **Ferroelectric BiFeO3-PbTiO3 films for photoelectrochemical water splitting** I 12.3  
Haozhen Yuan, Joe Briscoe  
School of Engineering and Material Science and Materials Research Institute, Queen Mary University of London, London, E1 4NS
- 12:00 **Discussion**
- 12:15 **Lunch and Plenary**

## Applications to industry : Roel Van de Krol

- 15:00 **INV Scalable photoelectrochemical hydrogen production and storage in a liquid silicon hydride carrier** I 13.1  
Hannah Johnson  
Toyota Europe
- 15:30 **TRIBOCHEMICAL DECOMPOSITION OF SODIUM ALANATE (NaAlH4)** I 13.2  
Muñoz-Cortés, E.\*(1), Ibrayeva O. L.,(2) Manso, M.,(3) Zabala, B.,(4) Flores. E.,(5) Ares, J.R.(1) & Nevshupa, R (6).  
(1) Department of Physics of Materials, Autonoma University of Madrid, Spain, (2) Department of System Programming, South Ural State University, Chelyabinsk, Russia, (3) Department of Applied Physics, Nicolás Cabrera Institute and Centre for Microanalysis of Materials, Autonoma University of Madrid, Spain, (4) Tribology unit, Fundación Tekniler, Eibar, Spain, (5) Departamento de Física Aplicada, Centro de Investigación y de Estudios Avanzados, Unidad Mérida, 97310, Mérida, Yucatan, México, (6) Spanish National Research Council, Eduardo Torroja Institute of Construction Sciences (IETCC-CSIC), Madrid, Spain, \*esmeralda.munoz@estudiante.uam.es
- 15:45 **Towards high productivity cathodes for hydrogen evolution reaction based on metal phosphides** I 13.3  
María Isabel Díez García, Sebastian Murcia, Joan Ramon Morante  
María Isabel Díez García, Sebastian Murcia, Joan Ramon Morante Catalonia Institute for Energy Research (IREC) Jardins de les Dones de Negre 1, Sant Adrià de Besòs, Spain
- 16:00 **Exploring the Advanced Tailor-made Catalyst materials and Systems for the Up-scaled Electroconversion of CO2** I 13.4  
Tandava. V.S.R.K., Andrés Alberto García, Sebastián Murcia-López, Joan Ramón Morante\*  
Catalonia Institute for Energy Research (IREC), Jardins de les Dones de Negre 1, 08930, Sant Adrià de Besòs, Spain.
- 16:15 **Discussion**
- 16:30 **Coffee**

## Applications to Industry II : Hannah Johnson

- 16:45 **INV Development upscaling of an electrochemical technology for the conversion of CO2** I 14.1  
Annelie Jongerius  
Avantium Chemicals
- 17:15 **Copper Vanadate Nanobelts as Anodes for PEC Water Splitting: Influence of CoOx Overlayers on Functional Performances** I 14.2  
Leonardo Girardi, Gian Andrea Rizzi\*, Lorenzo Bigiani, Davide Barreca, Chiara Maccato, Carla Marega, Gaetano Granozzi  
Leonardo Girardi – Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy, Gian Andrea Rizzi\* – Department of Chemical Sciences, Padova University, CNR-ICMATE and INSTM, Padova 35131, Italy, Lorenzo Bigiani – Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy, Davide Barreca – CNR-ICMATE, INSTM and Department of Chemical Sciences, Padova University, Padova 35131, Italy, Chiara Maccato – Department of Chemical Sciences, Padova University, CNR-ICMATE and INSTM, Padova 35131, Italy, Carla Marega – Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy, Gaetano Granozzi – Department of Chemical Sciences, Padova University and INSTM, Padova 35131, Italy
- 17:30 **Recent advances in lanthanide-doped TiO2 thin films for green hydrogen strategies** I 14.3  
Katarzyna Zakrzewska, Marta Radecka  
AGH-University of Science and Technology, al. Mickiewicza 30, 30-059 Kraków, Poland
- 17:45 **(Cu3-x Nix)Co2-Layered Double Hydroxide Nanosheets for Enhanced Electrocatalytic Activity Towards Water Splitting** I 14.4  
Sakshi Kansal, Debabrata Mandal, Surbhi Priya, Satvik Anshu, Trilok Singh, Amreesh Chandra  
Research Scholar, Research Scholar: Research Scholar, Research Scholar, Professor, Professor
- 18:00 **Discussion**

Friday June 3

Characterization and Modeling II : Huub de Groot

- 09:00 **INV Multi-scale modelling for photoelectrochemical water and CO<sub>2</sub> splitting** I 15.1  
Sophia Haussener  
Laboratory of Renewable Energy Science and Engineering, Institute of Mechanical Engineering, École Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland.
- 09:30 **INV Charge-carrier dynamics in hybrid materials based on colloidal semiconductor nanocrystals for light-driven catalysis** I 15.2  
Maria Wächtler  
Leibniz Institute of Photonic Technology
- 10:00 **Oxygen electrocatalysis at transition metal oxides: correlating activity with orbital occupancy under operational conditions** I 15.3  
Mohammed A. Alkhalifah, Benjamin Howchen, Joseph Staddon, Veronica Celorrio, Devendra Tiwari, David J. Fermin  
School of Chemistry, University of Bristol, Cantocks Close, Bristol BS8 1TS, UK
- 10:15 **Probing the optoelectronic structure of (Ir, Al)-codoped SrTiO<sub>3</sub> for enhanced photocatalytic activity** I 15.4  
Namitha Anna Koshi,† Dharmapura H K Murthy,‡ Sudip Chakraborty,¶ Seung-Cheol Lee,§ and Satadeep Bhattacharjee†  
†Indo-Korea Science and Technology Center (IKST), Jakkur, Bengaluru 560065, India ‡Materials Science and Catalysis Division, Poornaprajna Institute of Scientific Research, Devanahalli, Bengaluru 562164, India ¶Materials Theory for Energy Scavenging (MATES) Lab, Harish-Chandra Research Institute (HRI) Allahabad, HBNL, Chhatnag Road, Jhansi, Prayagraj (Allahabad) 211019 India §Electronic Materials Research Center, KIST, Seoul 136-791, South Korea
- 10:30 **Discussion**
- 10:45 **Coffee**

Water Splitting III : David Fermin

- 11:00 **INV Coupling of enzymes and sulphides to achieve water splitting and CO<sub>2</sub> reduction** I 16.1  
Conesa, J.C.\*(1), Osgouei, M.(1), Faraldos, M.(1), Coito, A.M.(2), Pereira, I. A. C.(2), Shleev, S.(3), Rana, M.(4), Vilatela, J.J.(4), Pita, M.(1), De Lacey, M.(1) (1) Instituto de Catálisis y Petroleoquímica, CSIC, Spain, (2) ITQB, Universidade Nova de Lisboa, Oeiras, Portugal, (3) Biomedical Science, Faculty of Health and Society, Malmö University, Malmö, Sweden, (4) Instituto IMDEA Materiales, Madrid, Spain. \*lead presenter
- 11:30 **The role of spin degrees of freedom in manipulating the reactivity of a metal surface containing 3d transition metals** I 16.2  
Satadeep Bhattacharjee and Seung Cheol Lee  
Indo Korea Science and Technology Center, Bangalore, India. Center for Electronic Materials, Korea Institute of Science and Technology (KIST)
- 11:45 **Catalyst Surfaces for Energy Conversion – In-situ Studies of Electrochemical driven Nanoparticle Exsolution** I 16.3  
R. Rameshan, L. Lindenthal, F. Schrenk, T. Ruh, A. Nennung, A.K. Opitz, C. Rameshan  
Institute of Materials Chemistry, TU Wien, Austria, Institute of Chemical Technologies and Analytics, TU Wien, Austria
- 12:00 **Discussion**
- 12:15 **Closing**