

ISACS12: Challenges in Chemical Renewable Energy

3-6 September 2013, Cambridge, UK

Programme

Tuesday 3rd September 2013

Graduate Symposium – St Johns College

09:00 – 16:00

West Road Concert Hall

14:30	Registration
17:15	Opening Remarks - Dr Robert Parker, CEO Royal Society of Chemistry and Dr Erwin Reisner, Co-Chair ISACS12
17:25	Introduction Energy and Environmental Science Lectureship (Chair – Philip Earis)
17:30	PLENARY: Atomic and Nano-scale Design of Electrode Materials for Lithium Rechargeable Batteries Professor Kisuk Kang Energy and Environmental Science Lectureship Recipient <i>Seoul National University, Korea</i>
18:15	PLENARY: Title TBC Professor Carlos Henrique Brito Cruz <i>Scientific Director at the Sao Paulo Research Foundation (FAPESP), Brazil</i>
19:00	Welcome Reception
21:00	Close

Wednesday 4th September 2013

West Road Concert Hall

Session 1 : Solar Fuels (Chair – Professor Sir John Meurig Thomas)	
08:45	PLENARY: Solar Fuels Professor Harry B Gray <i>Caltech (California Institute of Technology), USA</i>
09:30	CONTRIBUTING: Photocatalytic CO₂ reduction with visible light: dyads versus monomers Professor Robin Perutz <i>University of York, UK</i>
09:55	PLENARY: Water oxidation by amorphous transition metal oxides: Quasi-molecular materials resembling the biological catalyst of photosynthesis Professor Dr Holger Dau <i>Freie Universität Berlin, Germany</i>
10:40	COFFEE
Session 2: Solar Fuels (Chair – Dr Erwin Reisner)	
11:05	PLENARY: The artificial leaf Professor Daniel G Nocera <i>Harvard University, USA</i>
11:50	CONTRIBUTING: Turning CO₂ into Liquid Fuel Professor Matthew Kanan <i>Stanford University, USA</i>

12:15	PLENARY: Mechanisms of Photoelectrochemical Reduction of Carbon Dioxide and Water Splitting from First Principles Professor Emily Carter <i>Princeton University, USA</i>
13:00	CONTRIBUTING: Parameters affecting electron transfer dynamics from semiconductors to molecular catalysts for the photochemical reduction of protons Dr Anna Reynal <i>Imperial College London, UK</i>
13:30	LUNCH (and posters)
14:30	BBC World Service Recording
16:00	Posters (Evens)
18:00	Close

Thursday 5th September 2013

West Road Concert Hall

Session 3: Fuel Cells (Chair – Professor Jeremy Baumberg)	
08:45	PLENARY: Breakthroughs in Materials and Designs for Solid Oxide Fuel Cells Professor Sossaina M Haile <i>Caltech (California Institute of Technology), USA</i>
09:30	PLENARY: Enzymes as Inspirational and Instructional Electrocatalysts Professor Fraser A Armstrong <i>University of Oxford, UK</i>
10:15	COFFEE
10:35	PLENARY: Understanding the New Class of Pt₃X, and Pt₅X Alloys for improving the Oxygen Reduction Catalysts in PEMFC Professor Ib Chorkendorff <i>Technical University of Denmark, Denmark</i>
11:20	CONTRIBUTING: Rational design of molecular electrocatalysts for oxidation and production of H₂ using first row transition metals Dr Monte Helm <i>Center for Molecular Electrocatalysis, Pacific Northwest National Laboratory, USA</i>
Session 4: Molecular Catalysis/Solar Fuels (Chair – Paul Barker)	
11:45	PLENARY: Catalytic Hydrogenation and Dehydrogenation Reactions: Key Tools for Sustainable Chemical Processes and Hydrogen Storage Professor Matthias Beller <i>Leibniz-Institut für Katalyse, Germany</i>
12:30	PLENARY: Biomass and CO₂ as Feedstock for Fuels and Chemicals Professor Claudio Mota <i>Federal University of Rio de Janeiro, Brazil</i>
12:55	LUNCH (and Posters)
Session 5: Catalysis/Solar Fuels (Chair – TBC)	
13:55	PLENARY: From Highly Efficient Molecular Catalysts to Functional Devices for Light Driven Water Splitting Professor Licheng Sun <i>KTH Royal Institute of Technology, Sweden</i>

14:40	CONTRIBUTING: Carbon dioxide reduction by rhenium and manganese bipyridyl complexes: Mechanistic insights Professor Cliff Kubiak <i>University of California, San Diego, USA</i>
15:05	CONTRIBUTING: Catalytic reduction of CO₂ with earth-abundant molecular compounds Professor Dr Cyrille Costentin <i>Université Paris Diderot, France</i>
15:30	CONTRIBUTING: Photocatalytic hydrogen production with molecular systems: from homogeneous solution in pure water to the development of a NiO-based photocathode Dr Marie-Noelle Collomb <i>Université Joseph Fourier Grenoble 1/ CNRS, France</i>
15:55	COFFEE
Session 6: Molecular Catalysis/Solar Fuels (Chair – TBC)	
16:15	PLENARY: Bioinspired Artificial Photosynthesis for Solar Fuel Production Professor Shunichi Fukuzumi <i>Osaka University, Japan</i>
17:00	CONTRIBUTING: Mechanistic Insight into Effective Hydrogenation of CO₂ by Complexes with a Proton-Responsive Ligand Containing Pendent Bases Dr Etsuko Fujita <i>Brookhaven National Laboratory, USA</i>
17:30	Posters (Odds)
19.30	CONFERENCE DINNER (QUEENS COLLEGE)

Friday 6th September 2013

West Road Concert Hall

Session 7: Photovoltaics (Chair – Professor James Durrant)	
08:30	PLENARY: Interface Science of Organic Photovoltaics Professor Tobin Marks <i>Northwestern University, USA</i>
09:15	PLENARY: Organic semiconductor LEDs and solar cells: delocalization and spin Professor Sir Richard Friend <i>University of Cambridge, UK</i>
10:00	PLENARY: Recent Development of Nanostructured Solar Cells at the Center for Molecular Devices Professor Anders Hagfeldt <i>Uppsala University, Sweden</i>
10:45	COFFEE
Session 8 : New Battery Materials (Chair TBC)	
11:05	PLENARY: Enabling Efficient Oxygen Electrocatalysis for Electrochemical Energy Storage Professor Yang Shao-Horn <i>MIT (Massachusetts Institute of Technology), USA</i>
11:50	CONTRIBUTING: High Voltage Pyrophosphate and Sulphate Materials for Lithium Batteries: Insights into Local Structures and Lithium Diffusion Pathways Professor Saiful Islam <i>University of Bath, UK</i>

12:15	CONTRIBUTING: Interfaces in Lithium-Ion Battery Cathode Material LiCoO₂ and their Influence on Ionic Conductivity Dr Craig Fisher <i>Japan Fine Ceramics Center, Japan</i>
12:40	LUNCH
Session 9 : New Battery Materials 2 (Chair – Professor Clare Grey)	
13:30	PLENARY: The Aprotic Li-O₂ Battery: a Paradigm Shift in Energy Storage? Professor Peter Bruce <i>University of St Andrews, UK</i>
14:15	CONTRIBUTING: Are reversible fuel cells better batteries for large-scale renewable energy storage? Dr Christopher Graves <i>Department of Energy Conversion and Storage, Technical University of Denmark, Denmark</i>
14:40	CONTRIBUTING: In-situ Preparation of Conducting/Radical Polymer Electrodes for Efficient Energy-Storage/-Transport Assistant Professor Takeo Suga <i>Waseda University, Japan</i>
15:05	PLENARY: Following Function in Real Time: New NMR and MRI Methods for Studying Structure and Dynamics in Batteries and Supercapacitors Professor Clare Grey <i>University of Cambridge, UK</i>
15:50	Closing Remark - Professor James Durrant, Co-Chair ISACS12