

# Newsletter of The Energy Sector

## ENERGY SECTOR UPDATE

This issue welcomes a new Chair to the Energy Sector Committee, Prof. Mercedes Maroto-Valer. She is taking over from Prof. Alan Williams who has served as Chairman for 10 years. Dr. Chris Satterley is taking over as Secretary from Mr. Graham Henney who has also served the Sector since its inception over 10 years ago and remains now a member of the committee.

We also welcomed two new members of the Committee: Dr. David McCaffrey and Dr. Rachel Gomes who is our Newsletter Editor. We would like to take this opportunity to thank Prof. Williams, Mr. Henney and Mr. Dell for their long-standing contributions to the Energy Sector going back to its inception.

The Energy Sector is now a member of the Environment, Sustainability and Energy Forum, joining the Environmental Chemistry Group, Water Science Forum, and Toxicology Group. This will serve to align more our priorities. We want to thank the Industry and Technology Forum for their past support.

Prof. Mercedes Maroto-Valer, Chair.

## ENERGY SECTOR ACCOUNTS 2009

The aims of the Energy Sector are to organise a range of low cost meetings and maintain regular communication with members through the Newsletter. The modest charge of £2.50 achieved this, though will be replaced with the central subscription charge next year. Income was mainly spent on the Newsletter and meetings. The balance currently allows the Sector to run successful events at an affordable cost with several planned for 2010.

## RSC ROADMAP

In July 2009, the RSC published a roadmap for the chemical sciences entitled 'Chemistry for Tomorrow's World' for the next 15 years. Seven priority areas were identified covering issues which face today's society. Within these seven areas, 41 challenges were defined where the chemical sciences can contribute an important role in delivering solutions. The RSC has identified 10 of these 41 challenges as priorities for the next 5-10 years.

The Energy Sector is pleased to see that Energy is one of the priority areas and also features in 4 of the 10 challenges for the next 5 years.

**Priority Area: Energy** - creating & securing environmentally sustainable energy supplies, & improving efficiency of power generation, transmission & use.

Energy related challenges from the top 10:

**Conservation of scarce natural resources** – develop alternative materials to conserve precious resources & new processes to extract valuable materials from untapped sources.

**Energy conversion and storage** – improve the performance of energy conversion & storage technologies, such as batteries, & develop sustainable transport systems.

**Nuclear energy** – ensure the safe & efficient harnessing of nuclear energy, through the development of fission & investigation into fusion technologies.

**Solar energy** – develop existing technologies into more cost efficient processes & develop the next generation of solar cells to realise the potential of solar energy.

The full report including the breakdown of the priority areas and challenges can be found at <http://www.rsc.org/roadmap>. You can also register your interest in working with the RSC to address the key challenges identified in the roadmap.

## ELECTRONIC SURVEY

The Energy Sector will soon be conducting an e-survey of member's interests to help us better serve your needs. Further details will be available from [www.rsc.org/EnergySector](http://www.rsc.org/EnergySector)

## MyRSC

MyRSC is an online community where you can network with scientists across the globe, find members in your area and follow and get involved with the Energy Sector activities. For more information go to <http://my.rsc.org/home>

## REPORTS FROM RECENT MEETINGS

### RSC ENVIRONMENTAL CHEMISTRY SYMPOSIUM AND DISTINGUISHED GUEST LECTURE ON 'KING COAL: FUTURE PROSPECTS FOR GROWTH, USE AND CLEAN TECHNOLOGIES' Burlington House, London 24<sup>th</sup> March 2010

This half day afternoon meeting began with an introduction by the RSC Environmental Chemistry Group (ECG) Chairman, Dr. Leo Salter. The programme was well-balanced with good contributions from the academic, industrial and environmental NGO viewpoints. Dr. Doulas Parr (Greenpeace UK) began the session discussing the 'Risks of, and alternatives to, new coal'. This was followed by Nigel Yaxley from Coallmp (Association for UK Coal Importers) who spoke about the world coal and the imperative for CCS. Academic representation came from Prof. Stuart Haszeldine (University of Edinburgh) discussing 'Carbon capture and geological storage. Silver bullet, or broken bridge to the future?'. There was a broad agreement between all speakers that CO<sub>2</sub> emissions must be reduced and that coal was going to be part of our energy future at least in the short term. A range of ideas on the level of coal usage and role of CCS technologies were presented by the speakers which encouraged debate based on evidence as well as opinion.

The symposium culminated with the 2010 RSC Environmental Chemistry Group Distinguished Guest Lecturer, Prof. James Harrison (British Coal Utilisation Association) who delivered an engaging talk on 'Advances in the technology of the use of coal'. Prof. Harrison's lecture rounded off the programme with an excellent historical perspective on power generation from coal and the research into alternative combustion methods that may need to be revisited in the future. The event was very well attended by RSC members from industry and academia with an encouraging number of younger members and students.

All presentations by the featured speakers are available from the ECG website at <http://www.rsc.org/Membership/Networking/InterestGroups/Environmental/DistinguishedGuestLecture.asp>

### JOINT COAL RESEARCH FORUM / RSC ENERGY SECTOR SEMINAR ON 'CO-FIRING AND FUEL CHARACTERISATION' University of Nottingham, Nottingham 15<sup>th</sup> September 2009

Around 50 people attended this event with good representation from both industry and academia. Session One was chaired by Dr. David McCaffrey from McEnergy Consultancy with the first talk entitled "PF Combustion Efficiency and Ash Properties during Coal / Biomass Co-combustion" given by Dr. Ed Lester of the University of Nottingham. His conclusions were that although biomass solves some problems it creates others, its characterisation is very different from that of coal and that biomass ash will continue to need vigilance. The second paper was presented by Dr. Leilani Darvell of the University of Leeds and was entitled "Biomass Residues as Power Station Fuels". Dr. Darvell explained that the three most widely used biomasses in the UK in recent years were olive residues, wood and palm residues and that these were the materials which she had been studying. Dr. Roy Garwood of the University of Glamorgan gave the third presentation which was called "Fluidised Bed Combustion of Mixture of Coal and High Moisture Content Biomass". This work, which was sponsored by BCURA, involved the study of fluidised bed combustion of biomass from the sugar beet processing industry with coal. Session One ended with a talk by Mr. Mark Flower of Imperial College London entitled "Combustion of Single Particles of European Ash".

During the lunch period, participants visited the labs led by Ed Lester whilst members of the committee attended the Energy Sector AGM. Dr. Will Quick (E.ON Engineering) chaired the afternoon session which commenced with a talk by Ms. Karen Finney from the University of Sheffield on the "Reuse of Spent Mushroom Compost (SMC) and Coal Tailings for Energy Recovery". Dr. Bill Nimmo from the University of Leeds followed, detailing a comprehensive study into the "Combustion of Coal and Waste". The third presentation was by Mr. Patrick Cooke (E.ON Engineering Ltd.) entitled "E.ON's Experiences of Methods for Measuring Biomass Purity of Mixed Fuels" which included the activities of E.ON Engineering and the role of the Renewable Obligation (RO). The final paper of the day was a joint effort by Mr. Cliff Mullins and Mr. Paul Skinner of Minton, Treharne and Davies Ltd. and was entitled "Fuel, Biomass and Waste Analysis and Characterisation for Co-combustion". The group provides scientific consultancy, surveying and testing services to a worldwide client base from offices in the UK, USA and Asia.

The full report by Dr. Alan Thompson can be found at <http://www.coalresearchforum.org/crfnews.pdf>

## CALENDAR OF UPCOMING EVENTS

### JOINT RSC ENERGY SECTOR / RSC RADIOCHEMISTRY 'SPRING TECHNICAL MEETING' Burlington House, London, United Kingdom 24<sup>th</sup> June 2010

This one day meeting will provide an excellent opportunity to learn and discuss the latest advances in nuclear power and related issues. Eight guest speakers representing both academia and industry will cover among other topics, nuclear power generation prospects, nuclear waste management issues, cooling water options, and NDE techniques. Confirmed speakers include:

- Prof. Chris Grovenor (Head of Materials Department, Oxford University) *Designing more robust materials for the next generation of nuclear reactors by understanding how they degrade.*
- Dr. Stephen Liddle (School of Chemistry, University of Nottingham) *Uranium in Non-Conventional Ligand Environment.*
- Dr. Sarah Vine (Research Manager, Nuclear Decommissioning Agency Radioactive Waste Management Directorate).
- Mr. Simon Morgan (Regulatory Implementation Manager, Nuclear Decommissioning Agency)
- Mr. Mark Salisbury (Horizon Nuclear Power)

The fee will be £30 for Energy Sector members and £60 for non-members, with several bursaries available for student attendance. To register your interest and obtain further details please contact Prof. Maroto Valer ([mercedes.maroto-valer@nottingham.ac.uk](mailto:mercedes.maroto-valer@nottingham.ac.uk)).

### RSC ENERGY SECTOR CONFERENCE ON 'CHEMISTRY IN ENERGY – CURRENT AND FUTURE CHEMICAL CHALLENGES FOR THE ENERGY INDUSTRY' Venue to be confirmed, Midlands, United Kingdom early September 2011

To celebrate the 2011 Year of Chemistry and the importance of Energy in the RSC's roadmap, a three day conference will be held. It is proposed that the conference will focus on six roadmap challenge areas: Home Energy Generation and Use, Emissions Reduction including CCS (Air Quality Improvement & Fossil Fuels), Energy Conversion and Storage, Biofuels & Biomass, Hydrogen and new materials for Solar Energy.

A plenary session will start each day followed by 2 all-day parallel sessions with each session dealing with a single roadmap challenge. For each session there will be 8-10 speakers including 2 keynote invited speakers. Poster sessions will be held on days 1 and 2 with submissions strongly encouraged from students and early career researchers.

Alongside there will be a workshop meeting addressing each challenge and opportunities for further networking and discussion will be possible at the conference dinner. We anticipate good representation from both academia and industry to ensure a high quality programme for each session.

Further details will be available in due course from the Energy Sector website and in the October 2010 Newsletter. We look forward to welcoming you!

## FURTHER UPCOMING EVENTS

A selection of forthcoming events relevant to the Energy Sector are given below with a more detailed listing at <http://www.rsc.org/Membership/Networking/InterestGroups/Energy/ForthcomingEvents.asp> Please contact the Newsletter Editor if you attend any of these meetings and would like to write a brief summary of the meeting for the October 2010 Newsletter.

23-24<sup>th</sup> June 2010. **Energy in the City**, Southbank University, London, United Kingdom. Further details and registering at <http://www.uk-ises.org/>

6-7<sup>th</sup> July. **International Conference on Advances in Renewable Energy Technologies**. Putrajaya, Malaysia. Further details and registering at <http://www.energyinst.org.uk/content/files/icaret2010.pdf>

1-6<sup>th</sup> August 2010. **The 33<sup>rd</sup> International Symposium on Combustion**, Beijing, China. Further details and registering at <http://www.combustioninstitute.org/conferences.htm>

30<sup>th</sup> August-2<sup>nd</sup> September 2010. **Power Plant Air Pollutant Control 'MEGA' Symposium**, Baltimore, MD, United States. Further details and registering at <http://www.megasymposium.org/>

6-8<sup>th</sup> September 2010. **8<sup>th</sup> European Conference on Coal Research and its Applications**, Leeds University, Leeds, United Kingdom. Further details and registering at <http://www.coalresearchforum.org/conference.html> and <http://www.eccria.org/ibis/eccria-2010/homepage>

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### Opportunities to join the Committee

Over the coming months we will be looking to broaden the committee membership with representatives from the Nuclear Industry, Energy Conversion and Storage research, and Renewables research, so if you are interested in joining us, please send an email to the Chair or Secretary.

### The next Energy Sector Newsletter will be in October 2010

The October 2010 issue and all future Newsletters will now be in electronic format sent to your email address. Please note that if you have opted out of receiving RSC emails then you will not be able to receive our electronic Newsletter and so need to contact the RSC to change your preferences.

If you would like to continue receiving a hard copy of the Energy Sector Newsletter, please contact the Newsletter Editor confirming your postal address by 1<sup>st</sup> August 2010.