

Newsletter of the Energy Sector



FROM THE CHAIR

Dear Members of the RSC Energy Sector,

Those of you reading this column and expecting to receive the wise words of Mercedes Maroto-Valer are likely to be sadly disappointed. After five highly-productive years as Chair, Mercedes stood down last month and I'd like to thank her for her outstanding leadership over this period. Succeeding Mercedes is a daunting proposition but with our forthcoming programme of events I'm confident we'll continue the good work she's overseen for the last four years!

The Executive Committee has also undergone some significant changes. Martin Brown, Neil Edwards, Jenny Jones and Chris Satterley have all stood down and I would like to thank them for all their commitment and hard work over the last few years. A number of new faces have also appeared on the committee but I'll let them introduce themselves.

2014 seems to have raced by and has certainly been a busy year for the Energy Sector; we started the year with the highly successful Next Generation Materials for Solar Photovoltaics seminar in January, presented our inaugural (2013) PhD Thesis Award in March and held the Chemistry in Nuclear Power Generation Seminar in November. More details of all three can be found inside the newsletter. The closing date for our 2014 PhD Thesis Award is 31st December so it's not too late to submit an entry and hopefully claim the £500 prize.

Looking ahead, 2015 promises to be an even busier year starting with the Early Careers Event in February and what guarantees to be the Energy Sector's most ambitious event yet: the 1st Chemistry in Energy Conference to be held at Heriot-Watt University in July. Details of how to register for both of these events are in the newsletter so please read on.

This leaves me just enough space to wish you all a very Merry Christmas and a Happy New Year!

Richard Wain



FROM THE EDITOR

Dear Members,

I am really thrilled to take up the position of Editor of the RSC Energy Sector Newsletter. This is a new and exciting opportunity for me to become more involved

with the activities and dissemination of the Energy Sector. I will certainly do my best to keep you updated on what's going on in the Energy Sector and should you have any particular enquiries/comments on any piece of news published herein please feel free to get in touch!

As one of the new faces within the Energy Sector Executive Committee, you can find my brief bio in the coming page within this newsletter. But, I am not the only new face in the committee; a number of members have retired from the committee following completion of their maximum allowed term of office or due to changes in their personal circumstances, which has led to several new members/faces. All of them will be introduced in turn in following issues.

Hope you enjoy the Energy Sector Newsletter of this year!

Susana Garcia

What's inside

<i>New ES RSC Executive Committee Faces</i>	2
<i>Launch of the 1st Chemistry in Energy Conference</i>	2
<i>Stephen Preece selected as one of the "175 Faces in Chemistry"</i>	3
<i>PhD Thesis Award Competition</i>	3
<i>Next Generation Materials for Solar Photovoltaics</i>	4
<i>Solar PV update</i>	4
<i>New IEA Clean Coal Centre Report</i>	5
<i>New report on "Accelerating the commercialisation of emerging renewable energy technologies"</i>	5
<i>Increased risk of UK gas and power energy supply shortages this winter</i>	5
<i>"Chemistry in nuclear power generation" Seminar</i>	6
<i>"Carbon Capture and Storage" News</i>	6
<i>Recent Investments in UK Shale gas</i>	8
<i>Upcoming Events</i>	8



NEW ES RSC EXECUTIVE COMMITTEE FACES

Paul Brack MChem AMRSC

"I am delighted to be joining the Executive Committee of the Energy Sector. I graduated with a degree in Chemistry from

Loughborough University in July 2013, and am now pursuing PhD studies in collaboration with Intelligent Energy at the same institution. My research focuses on the development of materials to generate hydrogen for portable proton exchange membrane (PEM) fuel cells.

In my role as a member of the Committee I hope to be able to provide input from a students' perspective, and to get involved in the organisation of events aimed at early career members of the sector".



Susana Garcia MEng PhD MRSC

"I received my MEng in Chemical Engineering from the University of Oviedo (Spain) in 2004, and then my PhD in Chemical Engineering from the University of Nottingham (UK) in 2010. My

PhD research focus was on injection of CO₂-SO₂ mixtures in geological formations for CO₂ storage.

Upon completion of my PhD, I was involved in a collaborative academic-industrial research project for six months, which aimed at investigating and developing innovative CO₂ compression system technologies for commercial utility scale CCS. After that, I moved to the Spanish National Coal Research Institute (INCAR-CSIC), located in Oviedo (Spain), as a Post-doctoral Research Member. My research work there was mainly focused on CO₂ capture by solid sorbents.

I have recently (May 2014) joined Heriot-Watt University as Lecturer in Chemical Engineering, where I'm hoping to contribute to the Chemical Engineering teaching programme at all levels, and advance research within the area of carbon capture and storage (CCS). My research expertise and interests include energy and engineering fields: clean coal technologies; deployment of adsorption technologies with solid sorbents for CO₂ capture; new materials for CO₂ capture; simulation of gas-phase adsorption processes, and experimental and modelling studies on the mineralogical changes and fluid chemistry derived from the injection of CO₂ and co-injection of gas mixtures into saline aquifers".

LAUNCH OF THE 1ST CHEMISTRY IN ENERGY CONFERENCE

Conference Announcement and Call for Papers:



The Energy Sector of the Royal Society of Chemistry is pleased to announce that it is organising and promoting the 1st 'Chemistry in Energy Conference' (CEC) to be hosted by Heriot-Watt

University in Edinburgh, Scotland, on 20th-22nd July 2015.

The purpose of this Conference is to bring together scientists and technologists from academia and industry with interests in the applications of Chemistry in the Energy Industry. The conference aims to embrace all aspects of energy-related research, where chemistry and the chemical sciences play a key or underpinning role in solving the UK's combined energy challenges of carbon emissions, energy costs and security of supply. The scope of the conference will be broad and will include all energy forms and technologies.

Abstracts, which describe the applications of Chemistry in Energy are now invited. The scope should cover, but is not limited to, the mainstream energy sources: fossil fuels, nuclear and renewables.

In addition, the conference will also welcome abstracts which illustrate contributions from: chemical sciences to unconventional energy sources (fracking and underground gasification); nuclear fusion; maximising oil and gas recovery; solving challenges for fossil fuels; transitioning to renewables; energy distribution and conversion; materials developments for energy technologies; environmental and emissions issues and analytical chemistry in the energy industry.

Please note that conference fees for RSC Energy Sector Members are considerably reduced and those for RSC Student Members are particularly low, being subsidised through sponsorship funding.

Abstracts should be submitted to the Conference Secretariat by e-mail by 31st December 2014.

Full details and further information can be found on the Conference website:

www.chemistryinenergy.org

STEPHEN PREECE SELECTED AS ONE OF THE “175 FACES IN CHEMISTRY”

The RSC Energy Sector interest group is delighted to congratulate one of its new members, Stephen Preece, for having been selected as one of the 175 Faces in Chemistry.

This initiative was launched on the 15th October 2012 by Professor Lesley Yellowlees, the RSC's first female president, to promote equality and diversity throughout the chemical sciences. The project is part of a broader series of RSC activities aimed at highlighting and celebrating the diversity of the individuals, both past and present, who have helped to shape chemistry and science as a whole.

The initiative identifies and recognizes ambassadors and role models for future generations of scientists. 175 faces are featured over the 175 weeks that go from the launch of the program up until the RSC's 175th anniversary on the 23rd February 2016.

The now Chief Chemist at EDF Energy, Stephen Preece, and member of the Executive Committee of the RSC Energy Sector, has been recognized as an inspirational and outstanding chemical scientist and role model for the future generation of scientists as well as for representing diversity in chemistry. At EDF Energy, the company that owns and runs the nuclear power stations within the UK, Stephen oversees the ways in which chemistry can be used to improve a power station's performance.



(Photo credit: RSC website)

Stephen Preece is an example of how the vocational route can lead you to a successful and rewarding career in the Chemistry Sciences. He started his career in chemistry as an eighteen-year-old apprentice in what was called the Central Electricity Generating Board (CEGB) at that time. He combined working on his chemistry skills during work time with learning

theoretical skills through day release and part-time study which, after five years, led him to his chemistry degree.

If he had to emphasize an aspect of his career, that would be variety. Stephen has been involved not only with the Chemistry department within EDF, but also with many other roles within, for example, the inspection, engineering and training departments. As a result of that, he gained a wide range of skills and picked up lots of experiences which proved to be very helpful to him in his current role. As Chief Chemist of EDF Energy, Stephen Preece has re-introduced a scheme within the company to have chemistry technicians and chemistry apprentices starting from either GCSEs or from A-levels to work their way to do an online or part-time Higher National Certificate and, ultimately, a part-time degree. Stephen is, indeed, an example and role model for all of them as well as for everyone pursuing a career in chemistry.

PHD THESIS AWARD COMPETITION



Dr Alissa Cotton wins first RSC Energy Sector Thesis Award

The Energy Sector PhD Thesis Award is given for an outstanding PhD Thesis completed at a UK university in a specified calendar year in the field of *Chemistry for the Energy Sector* and assessed by a panel of experts drawn from the RSC Energy Sector Committee.

The 2013 winner was **Dr Alissia Cotton** for her PhD Thesis entitled “*Engineering Scale-up and Environmental Effects of the Calcium Looping Cycle for Post-Combustion CO₂ Capture*”. Her work explored the separation of CO₂ from fossil fuel combustion flue gas on a pilot-scale reactor and, through the course of her work, demonstrated techniques to improve CO₂ capture from 40% to almost 80% in a fluidised bed reactor. This work contributes to the developing technology in “carbon capture and storage” (CCS) to allow new fossil fuel power plants to operate in accordance with the 2010 EU Industrial Emissions Directive. Dr Cotton completed her PhD studies at Cranfield University under the supervision of Dr Kumar Patchigolla.

The purpose of the award is to spotlight UK PhD research in the energy sector. The competition is judged largely on the content and quality of an Executive Summary submitted by the candidate and

considers the following criteria: (i) the level to which the work addresses a clear identified need in UK or global energy requirements, (ii) the level to which the work adds significant new understanding to an aspect of the energy sector and (iii) the level to which the work contributes to quantifiable environmentally sustainable energy provision.

NEXT GENERATION MATERIALS FOR SOLAR PHOTOVOLTAICS

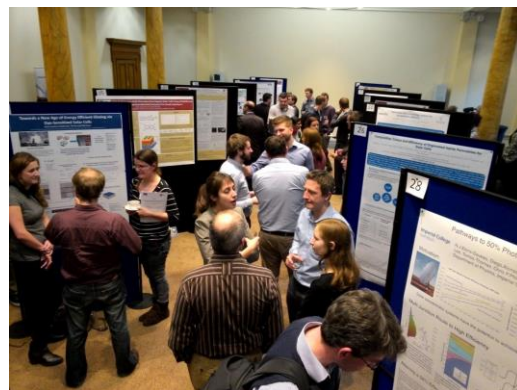
Symposium held at The Royal Society of Chemistry, London, on 15th Jan 2014

Hosted and underwritten by the RSC Energy Sector interest group, this was the first symposium we have staged on the topic of Solar Photovoltaics (PV) and it covered recent advances with a focus on materials for organic, inorganic and hybrid thin films.



The meeting attracted 110 delegates keen to hear the scientific presentations given by the 6 guest and 6 contributory speakers and the 28 poster presentations. Many delegates remarked on the quality and content of the programme, the fact that speakers came from both academic and manufacturing backgrounds and covered organic, inorganic and hybrid chemistries. We are particularly grateful to our guest speakers that included: Prof Sir Richard Friend (Cambridge), Dr Karsten Walzer (Heliatek GmbH), Prof Iain McCulloch (Imperial College), Prof Ayodhya Tiwari (EMPA, Switzerland), Dr Henry Snaith (Oxford) and Prof Stuart Irvine (Glyndŵr). A full meeting report can be found on the Energy Sector MyRSC site at:

<http://my.rsc.org/groups/blogpost/view/44/228/1316>

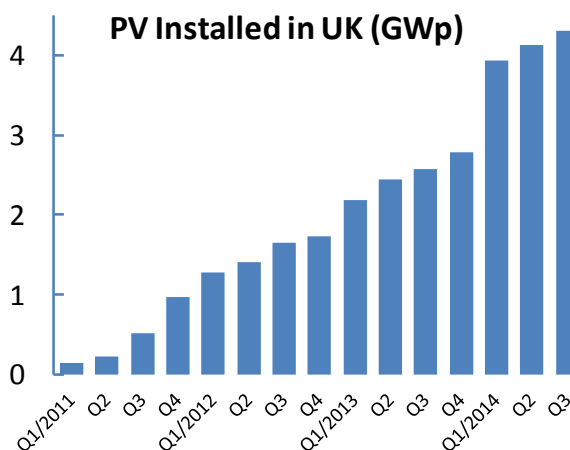


The RSC Energy Sector was grateful for a grant from the RSC Environment, Sustainability & Energy Division (ESED) that covered overseas guest travel costs and to SuperGen SuperSolar for advanced purchase of student tickets. We also gratefully acknowledge the contribution of the five commercial sponsors who subsidised the student fee: Merck Chemicals, Bentham Instruments, Bruker Scientific, LOT Quantum Design and Fluxim.

SOLAR PV UPDATE

Dr Nigel Mason, PV Consulting Ltd

In our last newsletter I reported on the deployment of PV Solar in the UK to the end of the 3rd quarter 2013. The latest published statistics from the Department of Energy and Climate Change (DECC) show a 67% increase in the installed Solar PV capacity to 4.31 GWp over the 12 month period to the end of September 2014. The electricity generated by Solar PV is now over 1% of UK annual consumption. Electricity generation by all renewables reached a record 15% of UK production in 2013.



NEW IEA CLEAN COAL CENTRE REPORT

A new report has been published by the IEA Clean Coal Centre on **“Coal sampling and analysis standards”** (CCC/235), which is available for free download from the website as long as you are a registered member.

Coal trading in regional and international markets is a large business every year and the basis of sale contracts is dictated by the properties of the coal. Due to coal’s heterogeneous character and extreme complexity, coal sampling protocols must provide material that is representative of the lot sampled. To ensure a representative sample is collected, correct sampling procedures should be followed and certain rules adhered to. Also, analyses of coal need to be sufficiently accurate so as to preclude negative scientific or economic consequences. All coal analyses should follow standard procedures in order to obtain repeatable and reproducible results. This report reviews various aspects of coal sampling and analysis. It provides descriptions of standard procedures for coal sampling, preparation and routine tests of coal specified in the international Standards. The commonly used instrumental techniques for routine coal analysis and their recent developments are also reviewed in this report.

Other reports recently published by the IEA CCC include:

- “Prospects for coal and clean coal technologies in Turkey”
- “Upgrading the efficiency of the world's coal fleet to reduce CO₂ emissions”
- “Blending of coals to meet power station requirements”
- “Non-fuel uses of coal”

NEW REPORT ON “ACCELERATING THE COMMERCIALISATION OF EMERGING RENEWABLE ENERGY TECHNOLOGIES”

The Carbon Trust partnered with Element Energy (strategic energy consultancy) to prepare this report for the International Energy Agency – Renewable Energy Technology Deployment (IEA-RETD), which was released in September and it looks into best practice innovation policy for emerging renewable energy technologies.

A different set of policy incentives are required for each step of the technology innovation chain, from basic research to deployment of mature technologies.

The report focuses on recommendations that can enable policy makers to achieve maximum gains by building on existing support levels. It also makes new recommendations to improve the delivery of on-going policy tools, focusing on reducing risk for private sector investment earlier along the innovation chain, and pursuing an increasingly international innovation policy.

The project led by the Carbon Trust and supported by Element Energy, involved extensive input through workshops and interviews with leading international policymakers and industry experts.

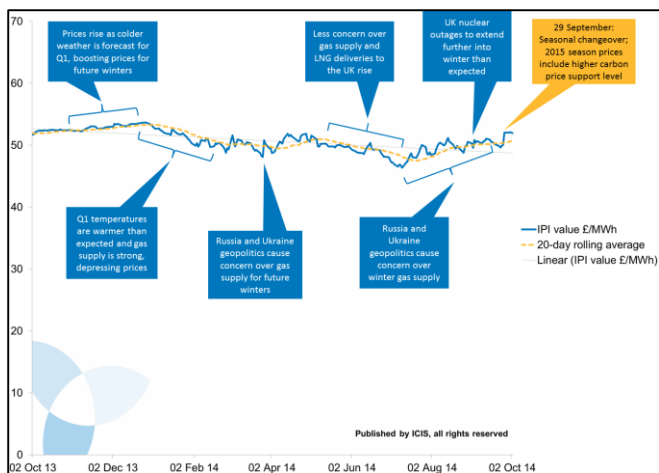
Full report is available at:

<http://iea-retd.org/wp-content/uploads/2014/09/RE-InnovationChain-Final-Report.pdf>

INCREASED RISK OF UK GAS AND POWER ENERGY SUPPLY SHORTAGES THIS WINTER

ICIS, the global independent price reporting agency, has highlighted wholesale market concerns over the threat of gas and power supply shortages this winter, with the release of its third quarter (Q3) analysis of 2014 into the ICIS Power Index (IPI).

The IPI, which reflects wholesale power prices over a year of delivery, confirms a downward trend, but also reveals a recent peak due to concerns over a potential shortage of supply. ICIS’ data and sources show this is a result of more nuclear generation capacity being offline for the winter than expected. The news that these outages could last into December 2014 caused the IPI to raise by 2.5 per cent day on day, when the news was announced on the 4th September - one of the largest single increases this year.



Source: ICIS website

At the same time, ongoing tension between Russia and Ukraine has caused concern over security of gas supplies. While Russia does not directly export gas to the UK, any disruptions to its supplies to continental Europe have a powerful knock-on effect on the UK market.

"Energy companies are actively buying and selling electricity in the market right now for delivery over the next year," said Zoe Double, Head of Power at ICIS. "Any price rises on the wholesale market could affect what consumers pay later on."

The IPI delivers insight into the complex world of wholesale power prices for both households and industrial electricity consumers. In its first comprehensive quarterly analysis following the launch in August 2014, the index has shown that the conflict in Ukraine exacerbated fears over reduced UK power generation.

“CHEMISTRY IN NUCLEAR POWER GENERATION” SEMINAR

This one-day event was held in The Cotton Theatre of The Manchester Conference Centre on 11th November 2014. The topics covered embraced the Operational Experience and Research from Gas-Cooled and Light Water Reactors.

The event attracted nearly seventy delegates and 59% of these represented the Nuclear Industry whilst 41% came from Academia. The Universities represented were: Manchester, Liverpool, Birmingham, Leeds and Greenwich. Seventeen students were given free registration as a result of a generous sponsorship grant of £1000 from The British and Irish Association of the Properties of Steam and Water.

The nine presentations and speakers are listed below:

- Chemistry in Nuclear Power – The Regulators Perspective - **Jeff Glover**, Office for Nuclear Regulation.
- Suppression of Carbon Deposition in an AGR - **Clive Mowforth**, EDF Generation.
- PWR Water Chemistry - **Brian Handy**, AMEC.
- Zinc Addition; What We Don't Know - **Sam Tulloch**, Rolls-Royce.
- Chemistry Aspects of the New UK EPR Nuclear Power Plant - **Michael Harrington**, EDF Nuclear New Build.
- BWR Main Circuit Chemistry Options - **Jim Henshaw**, National Nuclear Laboratory.
- BWR Hydrogen Water Chemistry - **Kath James**, Horizon.
- Feasibility of Back-filling around Multi-Purpose Containers in a Geological Disposal Facility - **Tara Beattie**, MCM Consulting.
- Molten Salt Chemistry and its Application in Nuclear Power Generation - **Trevor Griffiths**, Energy Process Developments.

Following on from this successful event, it is likely it will be repeated in 12 to 18 months' time and feedback from delegates would be welcome. Comments and suggestions should be made to Richard Wain, Energy Sector Chairman.

“CARBON CAPTURE AND STORAGE (CCS)” NEWS

Even though carbon capture and storage is recognised as one of the key technologies needed to deploy in a near to medium-term to enable fossil fuels usage over the next decades, its progress had stalled in recent years, mainly due to concerns around cost, complexity and potential health and safety risks.

The hereunder news on the topic reveals latest efforts in an aim to move the technology forward so the window of opportunity for CCS to become a reality is not missed out. Of utmost importance is the launch of the first integrated commercial CCS project, the Boundary Dam project in Canada.

White Rose CCS Project: NER300 funding and award of CCS Pipeline Contract

The country's flagship White Rose project located in Yorkshire, which aims to develop an oxyfuel power and carbon capture and storage (CCS) demonstration project of up to 450 MWe gross output, has secured €300 million funding from the European Commission's NER300 clean energy programme. The funding will help to get CCS up and running in the UK although its success of course, is still contingent on the British Government implementing supportive market mechanisms and incentives.

National Grid Carbon Ltd, the company that will provide the transportation and storage elements for the White Rose CCS project, has awarded the Front End Engineering and Design (FEED) contract for its CCS pipeline to oil and gas engineering specialists Genesis. Genesis will also perform risk evaluation and cost estimates. The pipeline will transport CO₂ from the Drax Power Station in Humberside, to a storage site in the North Sea, with a capacity to transport up to 18.7 million tons of CO₂ per year. Only the White Rose CCS Project requires approximately 2.2 million tons of CO₂ per year. The CO₂ will be transported through National Grid's proposed pipeline and injected approximately 0.6 miles beneath the North Sea seafloor for storage.

For more information:

<http://www.whiteroseccs.co.uk/>

Scotland and the Central North Sea – CCS hub study

A study by Element Energy Ltd, working with partners SCCS, AMEC, and Dundas Consultants, has shown that all the components are either in place, or can be readily developed, for Scotland to become a CCS hub to support UK and European CCS deployment.

The Central North Sea (CNS) provides the most abundant, diverse and well-characterised storage around the UK. It also attracts stakeholder interests, offering facilities such as pipelines, platforms and wells, as well as potential physical and commercial/regulatory configurations for CCS development. A great opportunity is out there for established North Sea operators as well as new entrants. That demands leadership and flexibility, which Scotland is ready and willing to deliver.

The report details the flexibility of Scotland and the CNS in offering multiple opportunities for CCS and

Enhanced Oil Recovery (EOR), ranging from a legacy infrastructure involving low capital costs and risks to a further expanded capacity as required by demands from Scotland, UK and Europe. It also provides a series of recommendations for Scotland if it wishes to be a European leader in CCS.

Full report is available at:

<http://www.element-energy.co.uk/wordpress/wp-content/uploads/2014/06/Element-Energy-Scottish-CCS-Hub-Study-Revised-Final-Main-Report-310314c.pdf>

UK Government's engagement with CCS

A scoping document has been published by the UK government where engagement with CCS industry is intended to continue, taking forward commitments published in the 2013 Electricity Market Reform Delivery Plan.

The "Next Steps in CCS: Policy Scoping Document" summarises the policies and actions the UK Government has taken as part of its world leading programme. Views, questions and evidence on a possible Phase 2 of CCS deployment were requested and collected in late October.

The scoping document can be downloaded at:

<https://www.gov.uk/government/publications/ccs-policy-scoping-document>

Boundary Dam - World's first integrated CCS project becomes a reality in Canada

Take a note of the date: 2 October 2014. This was the day the World's First Post-Combustion Coal-Fired CCS project became a reality. The \$1.35 billion project is the first-of-its kind and it is SaskPower's flagship CCS initiative in the Saskatchewan region in Canada.

The captured CO₂, estimated to be around one million tonnes per year, will be transported by pipeline to nearby oil fields in southern Saskatchewan where it will be used for enhanced oil recovery (EOR). The portion of CO₂ not used for EOR will be injected 3.4 kilometres underground, into the Deadwood sandstone formation (approximately 2 kilometres west of the Boundary Dam Power Station).



(Photo credit: SaskPower International Inc)

The project not only targets to reduce greenhouse gas emissions but it also aims to demonstrate the economic, technical and environmental feasibility for coal-fired power generation with CCS. Additionally, it will help support the development of industry-wide CCS regulations and policies.

RECENT INVESTMENTS IN UK SHALE GAS

Ineos, the Chemicals giant company, has announced in late November its plans to invest up to £640m in shale gas exploration in the UK.

The company believes and promotes shale gas as an important potential energy source that can revolutionise the UK energy industry as it has certainly done in the US in recent years. The plan is to use the gas as a raw material for its chemicals plants, including Grangemouth in Stirlingshire, Scotland, transforming the economics of the plants.

In recent months Ineos has been buying up rights to explore across hundreds of square miles of the Midland Valley around the Stirlingshire site.

However, the company is also well aware of the active opposition they will encounter from environmental groups, which fear earthquakes, water pollution and environmental damage derived from the fracking operations needed to extract the gas from the underground formations.

UPCOMING EVENTS

PhD Thesis Award Competition 2014

The RSC Energy Sector PhD Thesis Award Competition will run again this year for PhD's completed in the calendar year 2014. **Deadline for entries is 31 December 2014.**

Full details of the competition at:

www.rsc.org/energysector.

Early Career Energy Sector Chemists Symposium 2015

This event, organised by the RSC Energy Sector and sponsored by the Coal Research Forum, will be held in the Rolls-Royce Learning & Career Development Centre (LCDC) in Derby, on Friday 6th February.

All chemists working in the energy area in the early stages of their careers and their supervisors are invited to attend, including industrial chemists, academic researchers, post-graduates, undergraduate students and those with a background in chemistry but no longer working directly in the field.

The Energy Sector invites abstracts from younger members for a competition for posters to be displayed during this event. The top 30 abstracts, as judged by an Energy Sector Technical Review Committee, will be invited to give a 1 minute "elevator pitch" presentation and present their poster at this event.

Prizes will be awarded for the best presentations/posters, For RSC members the prizes will consist of a 1st Prize, (£250), a 2nd Prize, (£100), and 3 x 3rd Prizes of £50 each. For RSC members and non-members working in the fossil fuel area the Coal Research Forum will also be awarding 3 x £100 prizes.

The event is open to all early career chemists, regardless of age and is free to attend.

If you would like to apply to take part in the competition please download the application form from:

<http://www.rsc.org/events/detail/16998/early-career-energy-sector-chemists-symposium-2015>

Completed forms must be returned by 31st December 2014.

There are also a limited number of travel and subsistence bursaries available which can be applied for by early career RSC members.

The Heriot-Watt Scottish Energy News Research of the Year Awards

The Energy Academy at Heriot-Watt University is working in partnership with Scottish Energy News to celebrate achievement by young researchers in Scotland.

Applications are sought from researchers in the following categories: 1) Energy and the environment; 2) Energy in the marine environment; 3) Energy materials and storage; 4) Energy and fossil fuels; 5) Energy infrastructure and society; and 6) Energy entrepreneurship.

To be eligible, applicants should have worked in the Energy Sector for less than 10 years.

Applications from nominees or their sponsors should demonstrate one or more of the following: an excellent academic record relevant to their peers at the same stage of their career at this point; outstanding career progression or achievement in their chosen field of Energy research; for the Energy Entrepreneurship category, evidence of entrepreneurial achievement in the eyes of their peer group.

Competition opened on 20 October and **deadline for entries is 31 January 2015.**

Applications are welcome from: graduates enrolled on accredited programmes of learning, whether full- or part-time or on distance learning courses; Post-graduates from any Scottish university currently undertaking - or who have completed - a programme of study/research; Researchers employed in their chosen field of research or who over the last 10-years have at some time undertaken energy research in Scotland.

Full details of the competition at:

<http://www.energy.hw.ac.uk/general/genHWU-SEN-Awards.cfm>

The 11th Photovoltaic Science, Applications & Technology Conference (PVSAT-11)

The conference will be held at The University of Leeds, 15-17 April 2015. Full details at www.uk-ises.org.

Bursaries from the Energy Sector

The Energy Sector is in the process of setting up a Bursary Scheme for its members. The main purpose of the scheme is to provide a contribution to the total cost for attending national and international energy-related conferences and events. Applications are invited from full-time students who would be expected to supply details of the event with supporting details (e.g. a letter from their supervisor). Successful applicants would be invited to submit a short summary or essay about his/her impressions of the conference for inclusion in the next Energy Sector Newsletter. In the first instance, applicants should make contact with the Secretary of the Energy Sector.

COMMITTEE MEMBERSHIP

CHAIR

Mr. Richard Wain MRSC

Engineering Specialist - Chemistry & Corrosion
Rolls-Royce PLC.

E-Mail: Richard.Wain@rolls-royce.com

TREASURER

Dr. David McCaffrey CChem FRSC

Consultant

McEnergy Consultancy

E-Mail: davidja.mccaffrey@tiscali.co.uk

ACTING SECRETARY

Mr Michael Harrington MSci MRSC

Chemistry Engineer

Nuclear New Build, EDF Energy

Email: michael.harrington@edf-energy.com

NEWSLETTER EDITOR

Dr. Susana García MRSC

Assistant Professor

Heriot-Watt University

E-Mail: s.garcia@hw.ac.uk



The Energy Sector Group is an Interest Group of the Royal Society of Chemistry.

Our mission: to provide a forum for members to access knowledge and express views on chemical, legislative, educational and other matters relating to energy and to promote the interests, both within the RSC and externally, of the members.

For more information see:

<http://www.rsc.org/Membership/Networking/InterestGroups/Energy/>

ORDINARY MEMBERS

Mr. Paul Brack AMRSC

PhD Student

Loughborough University

Prof. Mercedes Maroto-Valer FRSC

Robert Buchan Chair

Heriot-Watt University

Mr. John Greene CChem FRSC

Independent Technical Consultant

Dr. Nigel B Mason CChem FRSC

Director/Consultant

PV Consulting Ltd.

Dr. Anna Bonne MRSC

Enterprise Development Manager

Imperial College London

Dr Stuart Norman CChem MRSC

Storage Technologies Consultant

E.ON Technologies

Dr Richard Oldroyd CChem MRSC

Senior Associate

Elkington and Fife LLP

Mr. Stephen Preece

Chief Chemist

EDF Energy

SEASON'S GREETINGS AND OUR BEST WISHES FOR THE NEW YEAR!

The next Energy Sector Newsletter will be in 2015. All Newsletters are 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.