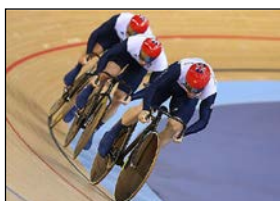


# Environmental Physics in the London Olympics?



**The Environmental Physics Group hosts a “Weather and Sports Performance” event with the Royal Meteorological Society**

\*images credit: LOCOG

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## Welcome to the Environmental Physics Group Autumn 2012 newsletter...

Welcome to another bumper addition of the Environmental Physics Groups newsletter. As will be noted from the committee list (Page 23) we've had many changes in the EPG committee over the last few months, but these changes have also been reflected at the very top IOP where we're lucky enough to have Paul Hardaker as the new IOP chief executive. Paul joins us from the Royal Meteorological Society and has been kind enough to write us a special note which can be seen on page 5.

There have also been several new additions to this newsletter. We still have the regular news and updates on previous and future events (page 7 and 11 respectively), but we have started a jobs and careers section (pages 19 and 20) that have been spurred on by readers suggestions. If you do have ideas or articles that you would like to see then please do let us know and we will try and incorporate them.

Enjoy the newsletter.



**Hugh Mortimer**  
Hugh.mortimer@stfc.ac.uk

## EPG News: A Message from Pat Goodman, Chair of the EPG

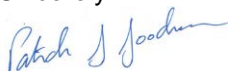
Dear Colleagues,

We have had a number of significant changes within the EPG since our last newsletter, we have a number of members who had finished their terms on the committee, and we have new members joining the committee. I want to thank those who have stepped down for all their work on behalf of the EPG, and I welcome our new members to the committee and look forward to working with them. Dr Hugh Mortimer has taken over as editor of our newsletter, so I wish Hugh well, and this is the first edition with Hugh in charge. At an IOP level, we have seen a new CEO, Prof. Paul Hardaker take up office. Paul was previously CEO with the Royal MetSoc, and the EPG worked closely with him organising joint events in the past. Paul attended our recent committee meeting, and we look forward to working with him in the future. He is very much aware of the role that environmental physics can play in promoting physics, (and its role in the public understanding of science). I am pleased that Paul has agreed to write a short article for this newsletter, which is on page 5. On behalf of the EPG, I would like to welcome Paul to IOP and to wish him well in his new post.

We held our Members Day in May, which is an annual event, and I certainly hope that we continue with it into the future. However the attendance was down a little this year, so maybe we need to change things around to ensure we are catering for what you our members need and want, so please send your suggestions and ideas to any member of the committee. I am aware that there were some communication breakdowns and it was difficult to find details of the event on the IOP website. We have been in discussions with the IOP to ensure that members can easily locate information on group events.

Finally I would like to invite you our members to submit items for inclusion in our newsletter. They can be details of upcoming events, reports on previous events, or short articles that may be of interest to our members.

Sincerely



Pat Goodman - Chair EPG

## **A Special Note from the New IOP Chief Executive, Paul Hardaker, to the EPG:**



I am delighted to be able to have a chance to write a short note for the newsletter, thanks Patrick for the kind invitation. After a couple of months I am still introducing myself to people as the 'new' Chief Executive at IOP, but I do already feel well and truly part of the Institute, and the last couple of months have flown by. I'm very grateful to all those who have made it such a welcoming and enjoyable start to my job at IOP.

I always imagined that it would be a busy time getting up to speed with things, and so it has been, but what has stood out for me over these past few weeks is the impact that the Institute has in some many key areas of physics, and science more widely. For example, in my first week in the job we welcomed the Rt Hon Michael Gove MP (Secretary of State for Education) to the Institute to help with our launch of the new Physics Teacher Training Scholarships. It was the day after the announcement of the reshuffles and we were a little nervous as to whether we would see anyone from the Department for Education at all. The Secretary of State cancelled all his other appointments that day but came to see us to talk with the new Scholars. We were able to make it a whole afternoon of celebrations for the 115 new trainee physics teachers who we have been able to give scholarship bursaries to, and I'm delighted to say that the Secretary of State has promised us funding for next year as well.

I have also been spending some of my time with the Science Minister's office talking about how the Institute can usefully contribute to the Triennial Review of the UK's Research Councils in 2013 and the Spending Review of Science that we are expecting in 2013/14. It is important that we are able to show the value that science contributes to the economy and society and how central physics and the physical sciences are to this. With this in mind we began this process with the launch of our report on Physics and the Economy in Westminster on 17 October and we will be presenting similar reports to the Governments of Scotland, Wales, Northern Ireland and the Republic of Ireland across the next few months.

Speaking of launching reports, just last week, as I write this, we launched two new reports at the Institute. The first was on the impact on physics of the £9,000 fees structure in England (small so far thankfully). But the one that caught the headlines was the launch of our report on 'It's different for Girls' (a nod to all Joe Jackson fans), talking about the challenges of increasing the number of girls studying physics at A-level and beyond. The report makes stark reading. Some 49% of co-educational state schools don't send on any girls to do A-level physics. It's not surprising therefore that girls only make up around 20% of A-level and degree physics students. I don't buy the argument made by some that girls don't like physics. Physics is about how the world works and how we solve some of the biggest challenges society faces, and it's nonsense to say girls are not interested in that. It's not an easy problem to solve, but it's time we made faster progress with it and Sir Peter Knight, the President, and I want the Institute to be leading the way on this. However I'm certain that if you look across Environmental Physics then the stats are not as bad. And what is good to see is that Environmental Physics degree courses are growing in popularity, with a number of new such degrees starting in the next couple of years. That in part reflects the continuing growth of this sector in many economies, not just in the UK.

Although I'm a mathematician by background, I've spent 25 years working in Environmental Physics, the last 20 in particular in meteorology. I began as an academic, working on projects with British Telecom Research Labs, the Rutherford Appleton Labs and ESA, then I moved to the Met Office, with a couple of short spells abroad and with industry, then a policy role before I found myself working at the Royal Meteorological Society. I came from there to the IOP at the beginning of September. In all of that time I have managed to keep science at the heart of what I have been involved in and pursue my particular interest in environmental physics. I'm hoping that will also be the case at IOP and that I will be able to be an active member of the Environmental Physics Group. With that in mind I very much hope to catch up with some of you at one of the Group events in due course.

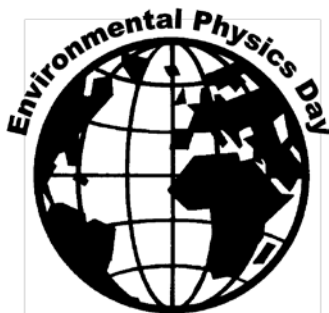
Paul Hardaker  
IOP Chief Executive

## Reports from EPG Previous Events

### The Environmental Physics Group Members' Day 2012

**IOP London: Wednesday**

**30<sup>th</sup> May 2012 13.00**



Building on the success of previous events, the Environmental Physics Group held another very successful annual Environmental Physics member's day. A 24 strong audience saw a mix of mix of presentations from environmental physicists from a variety of disciplines (such as geographers, mathematicians and meteorologists) as well as some excellent presentations from the EPG essay winners. The day also incorporated the AGM where new appointees for the position of secretary (a big congratulations to Sally Brow) and new

ordinary members committee members: (Paul Green, Claire Ryder) and Liz Kalaughter joins us from the IOP's free-to-read journal the "*Environmental Research Letters*".

### Environmental Physics Competition 2012 winners

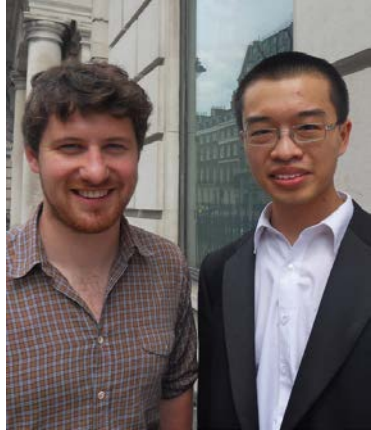
The quality of the essays submitted to the Environmental Physics Competition improves year-on-year, which the judging panel accepts is a good thing. However this does make it hard to determine the overall winner as is testament by the fact that there was so little between the top four entries that it concluded that we had to award them all with £100 each, which was presented to them, along with a certificate, at the members day.

- Benjamin Harden (postgraduate student): "To the Denmark Strait"
- Jesse Liu (undergraduate student): "Predicting the Unpredictable"
- Natasha Mulley (Year 11 school pupil): "It's Raining, It's Pouring ... Elsewhere in the Universe?"
- John Peacock: "A World Lit Up"

Ben Harden (pictured), gave a talk entitled “To the Denmark Strait”, which described field work he had been part of that measured sea temperatures and salinity in the strait between Denmark and Iceland as part of research into ocean currents.

Harden is about to start a postdoc at the Woods Hole Oceanographic Institution, having just completed his PhD at the University of East Anglia. Jesse Liu, (pictured) is a first-year physics student at Exeter College, Oxford. He gave a talk entitled “Predicting the Unpredictable”, in which he described both the predictive power and the constraints of climate modelling. His talk touched on the differences between climate and weather and the concepts of uncertainty and chaos.

Natasha Mulley, a Year 11 student at The Leys School, Cambridge, was unable to attend, but provided a video presentation on efforts to find water on Mars and on exoplanets, entitled “It’s raining, it’s pouring...elsewhere in the universe?” John Peacock, a PhD student at the University of Antwerp, was also unable to attend. His essay, “A World Lit Up”, described the negative impacts of excess lighting.



Ben Harden and Jesse Liu at the IOP



## Members' Day 2012: Evening lecture – 'A consideration of the forcing of climate change using simple physics'.

*Dr Arnaud Czaja, Imperial College, London.  
IOP London*



The EPG's Members Day (see page 7) was concluded by a joint event organised with the London and South East Branch where Dr Arnaud Czaja presented his research into the forcing of climate, where a 49 people attended the event.

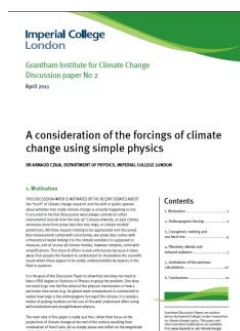
The motivation of the study was Michael Mann's (1999) 'hockey stick' paper which illustrates by way of measurements and proxy records (e.g. tree rings, ice cores, corals) how temperatures have remained relatively stable over the last one thousand years, until a sharp increase in temperature over the last century. Dr Czaja questioned the accuracy and variance of such data, which led him to consider the magnitude of the forcing of climate change (which has solid foundations in physics) due to human activities, rather than just debating about different time series analysis and climate model projections.

Whilst acknowledging other greenhouse gases exist, in his talk Arnaud specifically focused on the role of  $\text{CO}_2$  as a forcing to global warming (as there is clear evidence that annual atmospheric concentrations have increased) and its contribution to a physical response. For instance, in an idealised situation an increasing rate of 1ppmv of  $\text{CO}_2$  per year, would mean that it would take 280 years for atmospheric  $\text{CO}_2$  concentrations to double. He then looked at the relationship between such a forcing and the resulting anthropogenic heat flux over time, illustrating this over the last 300 years, which encompasses the beginning of the industrial revolution. This heat flux then was converted to a physical response – the melting of ice sheets in Greenland and Antarctica. The heat energy required to melt ice into liquid water is proportional to the mass of ice, multiplied by the latent heat of fusion of ice. Making the assumption that all energy available from the anthropogenic heat flux is assigned to melting, the mass of ice melted is calculated over time. This ice, then contributes to a rise in global sea levels. Although very idealised, the numbers demonstrated that the heat flux could contribute to a rise of sea level of about 2.5m in the time it takes  $\text{CO}_2$  to double. Such a rise could affect over 175 million people. Dr Czaja went on to discuss how the anthropogenic heat flux relates in more detail to ice melt and then to the planetary albedo and infrared radiation.

In conclusion, Dr Czaja found that increases in  $\text{CO}_2$  and thermal forcing suggest that there is sufficient energy to produce important changes in ice melt, and

therefore sea level rise. Acknowledging that an idealised approach was taken, Dr Czaja recognises that many other factors and responses, including feedback mechanisms are important to consider. Although stating the approach used is rudimentary and highly simplistic, these ‘back-of-the-envelope’ calculations attempt to give a feeling of the size of anthropogenic forcing, and make scientists and non-scientists alike question the role of greenhouse gases and the impact they are having on climate.

For those who were not able to come to the lecture, or would like further information, Arnaud has written a discussion paper, which can be found at: <http://www.sp.ph.ic.ac.uk/~aczaja/pdf/GI2011.pdf>



## 29<sup>th</sup> IUGG Conference on Mathematical Geophysics National Museum of Scotland, Edinburgh Monday 18<sup>th</sup> – Friday 22<sup>nd</sup> June 2012

The conference convener, Dr Mark Naylor reports on the 29<sup>th</sup> IUGG Conference on Mathematical Geophysics was held in July and supported by the EPG. The meeting attracted a highly international audience, 170 delegates from over 23 countries were represented. Topics ranged from mathematical methods – climate – natural hazards – geophysical exploration and uncertainty science. My personal highlight was the invited talk by the Crafford Award winner, Walter Munk’s invited talk on “Wind drag and Ultra-Gravity Waves”.



Mark adds, “I personally wish to thank the IOP Environmental Physics Group for supporting this event.”

## Forthcoming Environmental Physics Group Events

### Weather and Sports Performance

**Old Town Hall, 29 Broadway, Stratford, London E15 4BQ**

**Saturday, 20 October 2012, Time 10.30am**

Weather plays a crucial role in many outdoor sports, affecting both the safety and performance of athletes, as well as determining what tactics are to be used. This meeting discusses the influence of weather on various sports, and how up to date observations and forecasts can enable the sporting community to be as informed as possible in regards to weather conditions.



This meeting is part of the Royal Meteorological Society National Meetings programme, open to all, from expert to enthusiast, for topical discussions on the latest advances in weather and climate. Non members are welcome to attend these meetings. Where seating capacity is limited, priority will be given to members.

Maps and information concerning all meetings and memberships is also available from The Royal Meteorological Society, 104 Oxford Road, Reading RG1 7LL / [www.rmets.org](http://www.rmets.org) or +44(0)118 9568500

### Should weather and climate prediction models be deterministic or stochastic?

**Imperial College, Lecture Theatre (TBC), London SW7 2AZ**

**Wednesday, 17 April 2013, 2pm**



It is becoming increasingly common to represent subgrid-scale features in weather and climate models by including random noise. But is this really the best approach to the parameterisation problem? This meeting will examine the pros and cons of these stochastic approaches, compared to the traditional deterministic approach.

This meeting is part of the Royal Meteorological Society National Meetings programme, open to all, from expert to enthusiast, for topical discussions on the latest advances in weather and climate.

Non members are welcome to attend these meetings. Where seating capacity is limited, priority will be given to members.

Maps and information concerning all meetings and memberships is also available from The Royal Meteorological Society, 104 Oxford Road, Reading RG1 7LL / [www.rmets.org](http://www.rmets.org) or +44(0)118 9568500

## **Weather and Health; An Irish perspective**

***Botanical Gardens, Dublin***

***Conference on 17<sup>th</sup> November 2012***

The Irish Meteorological Society and the Institute of Physics (Institute of Physics in Ireland, and the Environmental Group of the Institute of Physics), invite researchers to present posters at the “Weather and Health” conference being held at the Botanic Gardens in Dublin on the 17<sup>th</sup> November 2012.



Researchers should submit a 200 word abstract of their poster material to [info@irishmetsociety.org](mailto:info@irishmetsociety.org) for review. Deadline 5pm on 30<sup>th</sup> October. Notification to those selected to present will be given by e-mail by the 5<sup>th</sup> of November.

It is important that you register to attend the event as places are limited. Please visit <http://www.irishmetsociety.org/latest/iop-ims-conference-17-november> to register and for details. Registration is free for IOP members, and members of the Irish Met Soc, registration is also free for researchers selected to present posters.

Researchers should submit a 200 word abstract of their poster material [info@irishmetsociety.org](mailto:info@irishmetsociety.org) for review. Deadline 5pm on 30<sup>th</sup> October. Notification to those selected to present will be given by e-mail by the 5<sup>th</sup> of November.

Abstracts accepted for presentation will be published in the conference brochure.

## **Quantitative measurements of atmospheric composition using laser-induced fluorescence spectroscopy.**

***University of Lancaster***

***Wednesday 17th April 2013,***

Free-radicals are intimately involved in the chemistry of the atmosphere. For example, the hydroxyl radical, OH, removes the majority of trace gases emitted into the atmosphere either naturally or via human activities. These include greenhouse gases and substances harmful to health, and OH initiates the formation of a wide range of secondary products, many of which are implicated in poor air quality, for example ozone and aerosols. Laser-induced fluorescence spectroscopy is a very sensitive method that has enjoyed considerable success in the quantitative detection of radicals in the atmosphere. In this talk, I will focus on the LIF detection of radicals at low-pressure using a supersonic free-jet expansion, how the method is made to be absolute, and the modifications that are necessary for field deployment of the instrumentation on ground and airborne platforms. The Leeds instruments have been operated in a number of locations worldwide, ranging from the Poles to the Tropics, and from rainforests to cities. Field measurements of the concentrations of radicals and comparison with calculations using a numerical model provides a stringent test of our understanding of the underlying chemistry, and I will give a flavour of the results in a variety of locations worldwide.

Contact for further details: Phil Furneaux [p.furneaux@lancaster.ac.uk], Bob Jones [robert.jones@lancaster.ac.uk] - Chair, IOP, Lancashire and Cumbria Branch

## **Forthcoming IOP Events**

### **International Conference on Neutron Scattering**

***Edinburgh International Conference Centre***

***Monday 8<sup>th</sup> – Friday 12<sup>th</sup> July 2013***

ICNS 2013 will bring together scientists from a wide range of disciplines including biology, chemistry, earth science, engineering, materials science and physics. This international conference is held every four years, and abstracts are not due until 15<sup>th</sup> February 2013, so plenty of time to get your thinking caps on!

For further information please visit the home page of the event:  
<http://www.icns2013.org/home>



**CIBSE Young Energy Performance Group Launch Event**  
***AECOM cafe, MidCity Place, 71 High Holborn, London, WC1V 6QS***  
***Wednesday 31st October from 6pm***

With the governments drive for zero carbon by 2016 for non domestic development and 2020 for all other commercial developments, the subject of energy efficiency and carbon emissions is ever growing in the construction industry. Responding to overwhelming interest from building owners, private and public sector tenants and industry professionals, the Chartered Institute of Building Services (CIBSE) has formed a Special Interest Group, the Young Energy Performance Group (Y-EPG), a subsidiary of the Energy Performance Group (EPG), which provides an opportunity for young professionals to contribute to the industry through sharing information and ideas.

Driving towards more energy efficient buildings will require an integrated approach from all those involved in the construction industry. This does not only mean designers and contractors but also but also those involved in consultancy, facilities management, research individuals and institutes and even students who may be interested in energy efficient and sustainable building construction.

The committee members of the group, which is made up of research students, architects as well as mechanical and electrical engineers, say “this is a group that will allow the next generation of young, innovative minds from all disciplines to get together and share their research and practical experience with the industry to allow the drive for energy efficient and low carbon; design, construction and operation”. They also said that “through sharing information, like presentations, we were able to understand where the industry is and what needs to be done to push it in the right direction”. The Young - Energy Performance Group has a mission to:

- Provide a platform for discussion and dissemination of innovative ideas and research regarding Energy Performance in Buildings.
- Reach out to young professionals and those aspiring to join the industry by providing an open forum for discussions.
- Enable networking opportunities promoting collaboration amongst members.
- Support members in their professional development.

On the Wednesday 31st October from 6pm the Y-EPG will be holding its launch event at AECOM cafe, 5th floor, MidCity Place, 71 High Holborn, London, WC1V 6QS to welcome and present to interested parties and individuals from all disciplines the mission of the group and its operation within CIBSE and the construction industry. To register for FREE, please click on the link below:  
<http://cibseyepglaunch.eventbrite.co.uk>

## Other Activities

### The 7<sup>th</sup> Annual Environmental Physics Group Essay Competition.

*Closing date – 31st December 2012*



Entries are now invited for this year's EPG Essay Competition. The aim of the competition is to encourage and recognise excellence in communicating the significance, value and rewarding nature of engaging with environmental physics. Entries should cover any aspect encompassed by the Group's interests in environmental physics, which include, but are not limited to: atmosphere and climate; hydrology; plant physics; glaciology; waste; energy; the built environment.

- **prize money totals £500;**
- a certificate will also be awarded to the winning author(s);
- the winning entry will be considered for publication (previous winners have been published in Physics Education);
- all entrants will be **offered 3 months free membership** of the Group and of the IOP;
- the competition is **open to all**, but entries from students are particularly welcome;
- essays must be **no more than 2,000 words** long;
- the closing date is **31<sup>st</sup> December 2012**.

Entries must be original and will be judged on writing quality and content. Essays adopting a purely scientific, policy-related or some other perspective will be welcomed. It is anticipated that presentations will be made by the winning author(s) at the Group's Environmental Physics meeting in the Spring of 2013.

Entries should be sent to: [env.essay@physics.org](mailto:env.essay@physics.org), preferably as a pdf file, along with full contact details and student status if appropriate. Entries may be also be submitted by post to:

Environmental Physics Group (essay competition),  
c/o Science Support Officer,  
The Institute of Physics,  
76 Portland Place,  
London. W1B 1NT

Further details are available on the Group's web site or from [env.essay@physics.org](mailto:env.essay@physics.org).

## Institute of Physics Awards



Nominations will shortly open for the Institute of Physics Awards. These awards are to recognise and reward outstanding achievements by physicists working in industry, business and research as well as contributions made to physics outreach and education and the application of physics and physics-based technologies.


The aim of these awards is to identify and honour physicists who are making remarkable contributions in their respective area and to encourage younger members to greater success in the future.

Therefore if you know of anyone that you think is deserving of an IOP award please feel free to them in the forthcoming IOP awards.. How to nominate and announcements on the upcoming nominations can be found at [http://www.iop.org/about/awards/nominate/page\\_38712.html](http://www.iop.org/about/awards/nominate/page_38712.html)

## Research Student Conference Fund

Each year the group is allocated funds for students to apply for financial assistance to attend environmental-physics related international conferences and major national meetings. We are pleased to sponsor students at events such as these, and students are welcome to apply for up to £250 during the course of their studies. Please see the advert below for further details.

**Supporting research students**



**Research Student Conference Fund**

Providing financial support to research student members, to attend international conferences and major national meetings.

Apply for up to £250 during the course of your PhD.

Applications are considered on a quarterly basis and should reach the Institute by: 1 March, 1 June, 1 September or 1 December

For further information see [www.iop.org](http://www.iop.org) or contact [supportandgrants@iop.org](mailto:supportandgrants@iop.org)

**IOP** Institute of Physics



## Reports from the Research Students Conference Fund Recipients.

### 19<sup>th</sup> International Symposium on Analytical and Applied Pyrolysis

*Audrey Roy-Poirier*

*4<sup>th</sup> June 2012*

The 19<sup>th</sup> International Symposium on Analytical and Applied Pyrolysis (or Pyrolysis 2012) was held at the Johannes Kepler University of Linz, Austria, from May 21<sup>st</sup> to 25<sup>th</sup> 2012. I had the opportunity to attend the conference and present some recent experimental work on pilot-scale biomass pyrolysis.



The conference was attended by 170 participants from academia, research agencies, and industry. Most delegates came from Europe, North America or Japan, but all continents were represented. The programme for the week contained 93 oral presentations (including 7 invited lectures) and two sessions dedicated to viewing 83 research posters.

The conference was divided in 4 main themes: analytical pyrolysis, applied pyrolysis, kinetics and mechanisms, and catalysis. Presentations over the first day and a half focused on the applications of analytical pyrolysis in identifying/characterising materials ranging from biomass, fossil fuels and soil organic matter to oils, polymers and lacquers. Five invited lectures covered: hydropyrolysis (Colin Snape), thermally assisted hydrolysis and methylation of organic carbon (Geoffrey Abbott), analytical pyrolysis of textile fibres (Maria Luda), chemotaxonomy by pyrolysis (José González-Pérez) and microwave pyrolysis of soil organic matter (Sylvie Derenne).

Most the work presented at the conference involved applied pyrolysis. Biomass pyrolysis, bio-oil production/characterisation, and pyrolysis of polymers and wastes were frequent topics. Two talks also covered the production of nanoparticles or nanotubes by pyrolysis. The purpose of most of the catalysis work was to improve the properties of liquids or gases produced by pyrolysis of biomass or waste materials. Tony Bridgwater (Aston University) gave an interesting plenary lecture on feedstock selection and catalyst use for biofuel production.

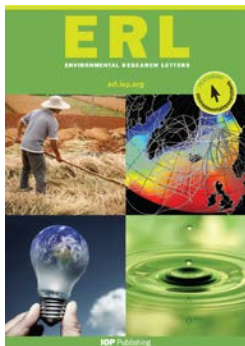
The pyrolysis kinetics and mechanisms session was opened by a plenary lecture on reactive intermediates formed by flash vacuum pyrolysis (Curt Wentrup). Both experimental and modelling work on various pyrolysis reactions was presented during this session. Two presentations on biomass pyrolysis modelling were particularly relevant to my research.

A total of 5 prizes were awarded to young pyrolysis researchers: 2 poster prizes and 3 for oral presentations. An excursion to the World of Steel exhibition and a traditional Austrian dinner rounded off the conference. Presentations were only allocated 15-minute time intervals, but a good number of breaks were provided for networking and additional discussion. On the whole, the conference was well organised and provided a great opportunity to showcase pyrolysis research of all types.

I had the opportunity to network with researchers doing work similar to mine and, since returning, I have been in touch with six researchers I met at the conference. I gained valuable feedback on the work I presented and received a number of useful suggestions and ideas to improve future results. Several participants shared some of the experimental and modelling difficulties I have experienced and their insight was very valuable. Overall I believe my research will benefit from the new knowledge and contacts I have gained by attending this symposium.

## Environmental Research Letters News

### Environmental Research Letters publishes its first 10 video abstracts



IOP Publishing's gold open access journal, *Environmental Research Letters* (ERL), has recently published its tenth video abstract. A new feature for 2012, video abstracts enable ERL authors to provide a fuller picture of their research by moving beyond the constraints of the written article. So far, participants have incorporated footage from the field, talking heads, photographs, diagrams, data and more. The full set is available to watch from the video abstracts link on the ERL homepage ([erl.iop.org](http://erl.iop.org)).

ERL is a broad scope, open access journal covering all areas of environmental science. We publish both high-quality research letters and commissioned Perspective articles that highlight the impact and wider environmental implications of studies in the journal. With a current Impact Factor of 3.631, ERL receives over 60,000 article downloads each month and aims to publish accepted articles within 90 days of submission. Research in the journal regularly appears in high-profile media outlets such as the New York Times, The Guardian and BBC.

This year, ERL has also introduced an enhanced full-HTML article view, offering an improved reader experience. Recently published focus issues, at the cutting-edge of research, include Environmental Impact of Wind Energy, Extreme Events and the Carbon Cycle, and Cryospheric Changes. To find out more or submit an article, go to [erl.iop.org](http://erl.iop.org).

ERL's sister website, *environmentalresearchweb*, offers a complementary news service. A member of the Guardian Environment Network of the world's best environment sites, *environmentalresearchweb* brings you news and views on the latest findings, along with jobs, events listings, video and audio, and a blog by expert researchers. Head to [environmentalresearchweb.org](http://environmentalresearchweb.org) to sign up for a free weekly email newswire and obtain a 25% discount on the ERL article publication fee.

The third product in IOP Publishing's environmental portfolio is the IOP Conference Series: Earth and Environmental Science (EES) - an open-access proceedings service. Visit <http://conferenceseries.iop.org/ees> for more details or to generate a quote for your event.

## Careers in Physics

### Getting chartered workshops

Have you ever thought about applying for Chartered status but are not sure how to go about it? Are you unsure of the requirements or put off by the forms? Workshops are being held in Belfast, London, Cardiff, Sheffield, Oxford, Cumbria, Cambridge, Manchester, Newcastle, Derby, Edinburgh and Inverness between now and November. The workshops will cover:

- *The benefits of getting chartered*
- *The two designations (CPhys and CEng) offered by the Institute and the differences between them*
- *The requirements and application process*
- *Making an effective application*

For further information, please go to [http://www.iop.org/membership/prof-des/chartership/page\\_51450.html](http://www.iop.org/membership/prof-des/chartership/page_51450.html). If you are interested in attending one of these workshops, please email [CPD@iop.org](mailto:CPD@iop.org) along with your membership number.

### IOP Careers Website and Bursaries

The IOP offers an up-to-date careers resource that is aimed at providing students and career scientists alike a place to explore new opportunities. The IOP would like to promote this service which can be found at <http://www.iop.org/careers/index.html> and advertise that they will be shortly announcing the return of their successful Institute internship scheme which was run last year.



Last year's scheme saw forty bursaries of £2000 being offered to undergraduate student members of IOP who have secured work placements of up to eight weeks in length, in an area related to physics-based business and innovation, to take place during the summer holidays. Next year's scheme will open within the next month or two, so watch this space!

Further information about last year's application process and news for the this coming years scheme please keep an eye on: <http://www.iop.org/careers/top40/index.html>

## Jobs Listing

### Marie Curie Initial Training Network (ITN) Research Opportunities

#### *"Human Exposure to Aerosol Contaminants in Modern Microenvironments" and Early Stage Researcher and Experienced Researcher Positions*

*Available Commencing 1st January 2013*

A total of 12 ESR and 3 ER positions are (subject to contract) anticipated to be available at a number of European research organisations in the framework of the FP7 Marie Curie Initial Training Network (ITN) "Human Exposure to Aerosol Contaminants in Modern Microenvironments" (HEXACOMM) that commences 1st January 2013. ESR appointments will be for 3 years and successful applicants would be expected to register for a PhD degree. ER appointments will be for 2 years. The main research goal of HEXACOMM is to apply scientifically –based modelling and experimental methods to relate concentrations of particulate matter in the indoor domestic environment to its sources and human exposure implications. For this purpose the PhD and Post Doc projects will focus on targeted indoor air quality measurements, source apportionment studies, micro-environmental modelling, dosimetry modelling and exposure studies.

#### Project Titles and Contact Details for Initial Enquiries

- ESR1 "Aerosol exposure analysis using mechanistically-based modules". Contact: Prof. Mihalis Lazaridis, Technical University of Crete, Greece, [lazaridi@mred.tuc.gr](mailto:lazaridi@mred.tuc.gr)
- ESR2 " Experimental controlled emission chamber studies". Contact: Prof. Mihalis Lazaridis, Technical University of Crete, Greece, [lazaridi@mred.tuc.gr](mailto:lazaridi@mred.tuc.gr)
- ESR3 "Experimental studies in modern offices". Contact: Dr. Kjetil Torseth, Norwegian Institute of Air Research, Norway, [kt@nilu.no](mailto:kt@nilu.no)
- ESR4" Computational Fluid Dynamic (CFD) simulations of aerosol deposition in the lungs". Contact: Prof. Stavros Kassinos, University of Cyprus, Cyprus, [kassinos@ucy.ac.cy](mailto:kassinos@ucy.ac.cy)
- ESR5 "Calculating pollutant lung dose for use in health exposure studies". Contact: Prof. Roy Harrison, University of Birmingham, UK, [r.m.harrison@bham.ac.uk](mailto:r.m.harrison@bham.ac.uk)

- ESR6 "On-line indoor/outdoor aerosol nanoparticle characterization at different ventilation scenarios". Contact: Prof. Kaarle Hameri, University of Helsinki, Finland, [kaarle.hameri@helsinki.fi](mailto:kaarle.hameri@helsinki.fi)
- ESR7 "Determining aerosol sources using observations, statistical methodologies and micro-environmental modelling". Contact: Dr. Kostas Eleftheriadis, NCSR Demokritos, Greece, [elefther@ipta.demokritos.gr](mailto:elefther@ipta.demokritos.gr)
- ESR8 "Personal exposure to PM during commutes: underground systems (metro)". Contact: Dr. Maria Cruz Minguillon, Agencia Estatal Consejo Superior de Investigaciones Cientificas (CSIC), Spain, [mariacruz.minguillon@idaea.csic.es](mailto:mariacruz.minguillon@idaea.csic.es)
- ESR9 "Determining bioaerosols indoors using advanced molecular and on-line laser induced fluorescence techniques". Contact: Prof. Ian Colbeck, University of Essex, UK [colbi@essex.ac.uk](mailto:colbi@essex.ac.uk)
- ESR10 "A comprehensive field study on the indoor/outdoor aerosol particle size distribution". Contact: Dr. Vladia Zdimal, Czech Academy of Science, ICPF, Czech Republic, [Zdimal@icpf.cas.cz](mailto:Zdimal@icpf.cas.cz)
- ESR11 "Control of indoor airflows for reduction of human exposure to aerosol contaminants". Contact: Prof. Arsen Krikor Melikov, Technical University of Denmark, Denmark, [akm@byg.dtu.dk](mailto:akm@byg.dtu.dk)
- ESR12 "Occupational exposure to engineered nanoparticles". Contact: Dr. Mar Viana, Agencia Estatal Consejo Superior de Investigaciones Cientificas (CSIC), Spain, [mar.viana@idaea.csic.es](mailto:mar.viana@idaea.csic.es)
- ER1 "Contamination of settled indoor dust with PAH – Sources and significance as an exposure pathway". Contact: Prof. Stuart Harrad, University of Birmingham, UK, [S.J.Harrad@bham.ac.uk](mailto:S.J.Harrad@bham.ac.uk)
- ER2 "Application of advanced chemical analytical techniques for aerosol size-resolved chemical characterization". Contact: Dr. Jaroslav Schwarz, Czech Academy of Science, ICPF, Czech Republic, [Schwarz@icpf.cas.cz](mailto:Schwarz@icpf.cas.cz)

In the first instance, interested parties should contact the appropriate individual above to discuss informally their suitability for the position.

## ....And Finally.

### **Barefoot Environmental Physics Committee Member walks for charity.**








Dr Chris Lavers, who is a lecturer at Dartmouth Royal Naval College and the University of Plymouth, and member of the Institute of Physics Environmental Physics committee removed his shoes for a two day personal challenge to walk from the Royal Naval College gates in South Devon to the Royal Marine base at Lympstone, near Exmouth, in the east of the county - a distance of over 27 miles. The father of five was raising money for aid relief for the Sudanese people of the Nuba mountains (via the Humanitarian Aid Relief Trust) and the Help for Heroes charity.






Chris previously took part in a sponsored barefoot walk from the town of Totnes to the village of Dittisham near Dartmouth – a total journey of 9.5 miles to raise awareness of the plight of the Nuba people, and a barefoot walk across the Parks of London earlier this year, culminating in a petition delivered to Downing Street by some 750+ mostly Sudanese in exile.

A further barefoot walk is planned to highlight the serious humanitarian situation in Sudan in the Spring of 2013 in Truro, with the support of the Bishop of Truro. Any folks interested in coming along are invited to contact Chris e: [chris.lavers@live.co.uk](mailto:chris.lavers@live.co.uk)

## EPG Committee

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This newsletter is also available on the web and in larger print sizes

The contents of this newsletter do not necessarily represent the views or policies of the Institute of Physics, except where explicitly stated.

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