

Research Grants and News

Latest Announcements

Atom Feed (<http://www.birmingham.ac.uk/news/atom-feed/>)

[Congratulations to Chemistry PhD student Lewis Smeeton \(/schools/chemistry/news/articles/news10.aspx\)](#)



who was recently awarded the Kate Burt Prize at the annual Molecular Graphics and Modelling Society's Young Modellers' Forum in London.
12/01/2015

[Congratulations to Chemistry PhD student Gemma Bullen \(/schools/chemistry/news/articles/news11.aspx\)](#)



for winning the Nature Chemistry prize for "best oral presentation" at the 4th Annual Postgraduate Symposium on Nanotechnology.
12/01/2015

[Congratulations to Jack Davis \(/schools/chemistry/news/archive/news8.aspx\)](#)



who was recently awarded a poster prize at the National Training School in Theoretical Chemistry held in Oxford.
17/09/2014

[Congratulations to Elli Chatzopoulou \(/schools/chemistry/news/archive/news7.aspx\)](#)



who was awarded the 'Top Poster Award' at the 5th EuChemS biannual European Chemistry Congress in Istanbul.
17/09/2014

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Recent Grants Awarded

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Prof. Colin Greaves

Functional materials derived from the schafazikite mineral framework
EPSRC (£625k)

Achieving an energy framework that is both clean and sustainable is essential to target the problem of global warming; a solution will rely on new concepts in the design of materials rather than improvements to existing materials. The proposed research will modify a known, but rare, mineral structure to provide properties that are crucial to energy storage devices, both for new electrode materials and new electrolytes. In addition, chemical modifications to the mineral have resulted in a rare magnetic order in metal oxides, and potential superconducting properties will now be explored. This project is lead by Prof. Colin Greaves in collaboration with Dr Sarah Horswell and Dr Mark Read.

Dr Joe Hriljac

DISTINCTIVE (Decommissioning, Immobilisation and Storage solutiOns for NuClear wasTe InVEntories)
EPSRC (£509k)

The EPSRC has awarded £6.1M across 10 Universities to fund DISTINCTIVE (Decommissioning, Immobilisation and Storage solutiOns for NuClear wasTe InVEntories) for 48 months beginning February 2014. Two researchers will be based in the School of Chemistry, a PDRA in the groups of Dr Joe Hriljac and Dr Mark Read to investigate new inorganic ion exchange materials targeted for the selective uptake of radioactive Sr and Cs in the presence of competing ions and complexants in solutions over a range of pH conditions and a PhD student in the group of Mark Read to undertake modelling of plutonium dioxide ageing and fuel residues.

Prof. James Tucker

Expanding the Range and Versatility of Ferrocene Nucleic Acids
Leverhulme Trust (£118k)

This grant will explore different synthetic routes towards ferrocene derivatives that form the monomeric components of a new organometallic version of DNA, called Ferrocene Nucleic Acid (FcNA). Various RNA and DNA nucleobases will be attached to ferrocene, which will also be suitably functionalised to allow incorporation via established solid-phase synthesis into oligomeric chains of FcNA or FcNA-DNA conjugates. More details can be found [here \(http://www.leverhulme.ac.uk/news/news_item.cfm/newsid/6/newsid/242\)](http://www.leverhulme.ac.uk/news/news_item.cfm/newsid/6/newsid/242).

Dr Melanie Britton

Magnetic Resonance Imaging of Aluminium and Zinc Electroplating in Ionic Liquids
Leverhulme Trust (£150k)

This project is a collaboration with Dr Alison Davenport (Metallurgy and Materials) and Prof Karl Ryder (Leicester University), which will advance the application of magnetic resonance imaging (MRI) to study electrodeposition and electrodisolution of metals in ionic liquids. Electrochemical plating (deposition) and polishing (dissolution) of metals are important manufacturing techniques. However, many of the electrolytes currently used are hazardous and/or toxic and their disposal is expensive. Thus, there is considerable interest in the use of ionic liquids for electroplating as sustainable alternatives to toxic electrolytes. To achieve this, an understanding of how ionic liquids support and influence electrofinishing processes requires knowledge of local composition and transport behaviour in situ and in real-time. This remains a huge challenge and requires new analytical methods. This project will address this problem by developing novel MRI methods for in situ visualisation of electrochemical processes during electroplating.

Prof. Nigel Simpkins

Chemistry at Birmingham: a Response to the EPSRC Call: Core Capability for Chemistry Research
EPSRC (£906k)

This proposal will enhance the research activities of the School of Chemistry at the University of Birmingham, through the acquisition of new equipment. The items of equipment sought include a travelling-wave ion mobility mass spectrometer (IM-MS) with both matrix assisted laser desorption ionisation (MALDI) and electrospray ionisation capabilities, a multinuclear diffusion probe for 300 MHz NMR microimaging system (micro-MRI), with ¹H and X-nucleus capability (i.e. ¹⁹F, ³¹P), and two X-ray diffraction instruments to analyse both crystalline and non-crystalline samples.

This equipment will powerfully enable a range of diverse research within the SoC, and involving many collaborations in academia and industry. The research supported falls under the School banner of Chemistry for Health and Sustainability, which maps onto global issues, and in turn forms crucial parts of the research agenda for EPSRC. In particular, our priorities map onto priority areas of EPSRC Research Themes including Manufacturing the Future, Energy, and Healthcare Technologies, and also the Physical Sciences Grand Challenge, Dial-a-Molecule.

Dr Graham Worth

Developing the MCTDH Quantum Dynamics Code: Accurate Direct Dynamics of Non-Adiabatic Phenomena
EPSRC (£283k)

In collaboration with Dr. Mike Bearpark at Imperial College London, we are developing software to study the behaviour of molecules after they absorb a photon of light. Capturing the details of energy flow requires huge computational resources even for a small molecule and we will reduce this effort to allow molecules of more general interest to be studied.

Dr Graham Worth

Photoelectron spectroscopy in a liquid microjet: Unravelling the excited state dynamics of photoactive proteins
EPSRC (£286k)

The green fluorescent protein has become a well-used marker in following the behaviour of biological systems. It's photochemistry is, however, not fully understood. For example, why does it fluoresce in the protein but not solution? In a collaborative project with Prof. Helen Fielding at UCL, we will be using state-of-the-art experiments and calculations to answer these questions.

Recent News

Congratulations to **Elli Chatzopoulou** and **Matthew Barrett**, who were awarded two of the three poster prizes at the Royal Society of Chemistry organic division regional meeting held in Nottingham on April 25th 2014. Elli and Matt are both 3rd year PhD students in the School of Chemistry working in molecular synthesis and catalysis. Elli is supervised by Paul Davies while Matt is jointly supervised by Paul Davies and Richard Grainger.

Elli Chatzopoulou, a 3rd year Doctoral researcher in the Davies Group, was selected to present a poster at the RSC Organic Division Poster Symposium in Burlington House, London. The RSC Organic Division chose 37 students to present at the Poster Symposium, giving them the opportunity to discuss their work with delegates from industry, academics and other peers. Elli's poster was entitled "Highly regioselective synthesis of 2,4,5-(hetero)aryl substituted oxazoles by intermolecular [3+2]-cycloaddition of unsymmetrical internal alkynes". More information about Elli's work can be found in a recent publication in Chemical Communications.

Dr Ana B. Caballero, a postdoctoral researcher in Prof. Mike Hannon's group, was one of the lucky researchers who got the chance to participate in the Lindau Nobel Laureate Meeting (LNLN), after passing several national and international selection processes. This year the LNLN was dedicated to Chemistry and 34 Nobel Laureates congregated in Lindau, with 625 researchers from 78 countries. During this trip, she was invited to present her work at a satellite event organized by Bayer, where she received the First Prize for her poster entitled "DNA-targeted multimodal gold nanoparticles: Towards a new generation of theragnostic anticancer agents"

Dr. Paramaconi Rodriguez wins the CIDETEC award which recognizes recently published article "The promoting effect of adsorbed carbon monoxide on the oxidation of alcohols on a gold catalyst" which is featured on the cover of Nature Chemistry in 2012.

Congratulations to **Rowena Fletcher-Wood**, who won 2nd prize for best student poster ("Zeolites and Other Molecular Sieves for Environmental Remediation") at the British Zeolite Association Meeting that was held recently at Keele University. Her work concentrates on the synthesis and characterisation of zeolites and other molecular sieves for the selective reduction and uptake of carcinogenic Cr(VI) in wastewater, with the object of recycling the chromium back into industry.

Marie Betou, a 4th year PhD student in Dr Richard Grainger's research group, recently presented her work at the 8th Junior National Organic Synthesis Trust (J-NOST) conference in Guwahati, India. For the past 5 years the Royal Society of Chemistry Organic Division has chosen approximately 8 UK PhD students to speak at the J-NOST conference, building links with Indian chemists at a comparative stage of their career, and representing both the RSC and the younger members of the UK organic chemistry community. Marie presented a talk entitled "Semipinacol rearrangement of cis-fused β -lactam diols into keto-bridged bicyclic lactams"

Claire Green, a PhD student in Dr Mark Read's Group, has won first prize for her poster entitled "A Computational Study of ThO₂: A Possible Nuclear Fuel" at the Midlands Energy Graduate School (MEGS) Christmas Meeting hosted by the University of Nottingham.

