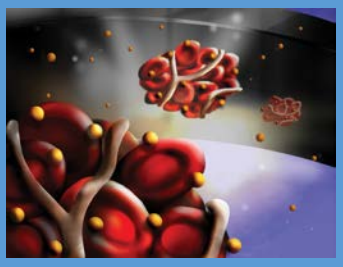
ANTIBODY-FREE BLOOD TYPING



The paper "Development of Molecularly Imprinted Polymers specific for blood antigens for application in antibody-free blood typing", by S. S. Piletsky, S. Rabinowicz, Z. Yanga, C. Zagara, E. V. Piletska, A. Guerreiro and S. A. Piletsky, describes the synthesis of paramagnetic molecularly imprinted nanoparticles with binding sites specific to blood antigen trisaccharides. This paper highlights their application in a bloodtype test as an alternative to commonly used antibodies. It describes a successful molecular imprinting of oligosaccharides, a class of molecules rarely addressed by molecular imprinters.

The paper featured on the front cover of Chemical Communications. For a link to the ChemComm website click here

Chemistry Department well represented in the 2017 House of Commons STEM for Britain Competition

Out of 500 submissions nationally students **Georgina Girt**, **Charlotte Pughe** and **Jodie Coulston (L to R)** have been shortlisted to showcase their excellent research in the House of Commons as part of the STEM for BRITAIN awards.

Jodie Coulston will be presenting her poster entitled "Nucleation and growth phenomena of silver in physical developer for latent fingerprint development" in the Physical Sciences Session. **Charlotte Pughe** will be presenting her poster entitled "A tale of nanomagnetics: Freezing the atomic spins" in the Physical Sciences Session. **Georgina Girt** will be presenting her poster entitled "Synthesis of teixobactin analogues: Small *cyclic peptidomimetic drugs to combat antibiotic resistance"* in the Biological and Biomedical Sciences Session. **Professor Paul Cullis** has been asked by the Parliamentary and Scientific Committee and the RSC to be one of the national judges of the Chemistry Posters in the Physical Sciences Session, a role that he has fulfilled since 2009.

DR DYLAN WILLIAMS PART OF TEAM ANNOUNCED AS HEA AWARD FINALISTS

Congratulations to Dr Dylan Williams and the Centre for Interdisciplinary Science teaching team who have been announced as finalists for the Higher Education Academy's prestigious Collaborative Award for Teaching Excellence.

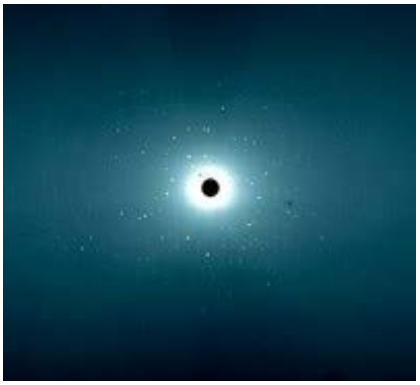
Dylan and the team have developed a unique programme of interdisciplinary modules taught by problem-based learning (PBL) that integrates employability skills through authentic assessments.

PROF ANDREW ELLIS DISCOVERS A NEW FORM OF CONDENSED HYDROGEN

Professor Andrew Ellis at the University of Leicester and colleagues at the University of Innsbruck and the Free University Berlin have discovered a new form of solid hydrogen. Publishing in the world's leading physics journal, Physical Review Letters, this team has shown that hydrogen can be condensed in a negatively charged form. Negatively charged hydrogen ion clusters—consisting of five or more hydrogen atoms—have been observed for the first time. Please find a link to the paper here.

This work opens up the possibility of exploring the physical and chemical properties of this new form of hydrogen, including quantum exchange effects.

Prof. Emma Raven part of team that unveils hidden step in enzyme mechanism

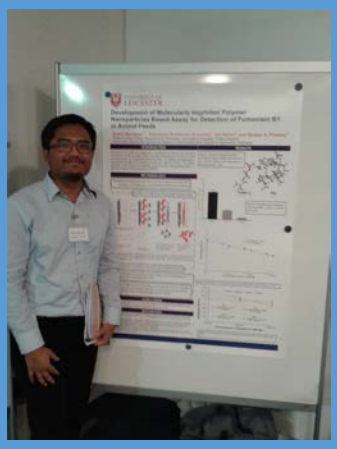


An international research team led by Professors Emma Raven and Peter Moody from the University's Institute of Structural and Chemical Biology has made a breakthrough advance by trapping an intermediate in the mechanism of enzymes called heme peroxidases and determining its structure using a beam of neutrons from the heart of a nuclear reactor. The advance was announced in *Nature Communications* (link here). The Leicester team members say they are delighted by their finding which could change the way we understand how these enzymes work through 'wonderful collaborations' with scientists at European facilities such as the Institut Laue-Langevin (ILL) in Grenoble and FRM-II in Munich, as well as the Diamond Light Source in Oxfordshire and the EPR centre at Manchester University.

Professor Raven said: "The exact nature of these enzyme intermediates has been the subject of a long-standing controversy and conflicting interpretation of indirect evidence. At last we have been able to see these directly, and so this really is the 'holy grail' of heme enzyme research."

This work was headlined in the Institut Laue-Langevin (ILL) 50th birthday celebrations.

ON CONFERENCE: HASIM MUNAWAR

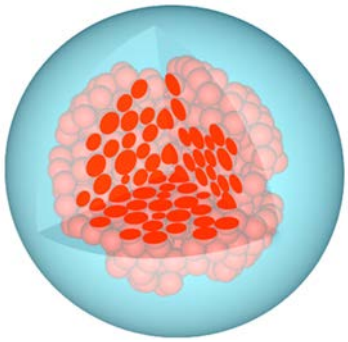


One of our MPhil students, Hasim Munawar from the Biotechnology Group, attended SIFA 2016 - a conference on Food and Agriculture – at the University of Cambridge from 29th – 30th November 2016.

He presented a poster entitled "Development of Molecularly Imprinted Polymer-Based Assay for Detection of Fumonisin B1 in Animal Feeds".

Hasim discussed using sensor technology in agriculture and his work in Indonesia.

DR SHENGFU YANG DISCOVERS FERROMAGNETIC CHROMIUM



Dr Shengfu Yang in the NanoChemistry Group has discovered ferromagnetism in chromium, an element that is normally ferromagnetic. It seems that the ferromagnetism is due to the abundant unbalanced surface spins created in the chromium nanoparticles as they grow via a frustrated aggregation process in superfluid helium.

This finding suggests that antiferromagnetic elements, such as chromium and manganese, can be incorporated into novel nanomagnets with improved magnetic properties if properly tailored (Advanced Materials 29, 1604277, 2017 see here).

Dr Kal Karim wins British Muslim Award

On Wednesday 25 January Dr Kal Karim was presented with an award for Services to Science and Engineering. Launched in 2013, the awards celebrate the successes, achievements and contribution of Britain's Muslims to British society.

"I was humbled and delighted to have won the award for Services to Science and Engineering at the British Muslim Awards" said Kal. "This is the accumulation of many years of hard work but is also a collective effort of Leicester Biotechnology Group and many colleagues who have supported me throughout my career. I am hoping that the award will inspire students, particularly those from BME backgrounds, and will help them nurture their enthusiasm and talent to be successful in pursuing a career in science and engineering".

UCAS VISIT DAYS

UCAS season began on Saturday 11th February with a full house of just under 40 applicants and around 50 guests. We are running 5 UCAS visit days this year. Whilst the Saturday 11th February date has proven to be the most popular booking at present, the remaining days are filling up nicely too.

This year the schedule has changed from 1:1 meetings with staff to small group meetings (maximum of 4 students per group).

The Department is bucking the national trend in applications, showing a significant increase in applications.

Many thanks to all of staff involved including the Admissions Tutor, Richard Blackburn, and Admissions Chair, Eric Hope, and all UCAS visit day ambassadors and lab helpers.

£150 RAISED FROM BAKE SALE

A bake sale in the department on Monday 12th December raised £150 for Parkinson's UK, a charity which provides research into and support for those diagnosed with Parkinson's.

Bakes included gingerbread men and Christmas trees, a Star Wars themed Christmas cake, mince pies, Christmas cupcakes and a chocolate orange torte.

Many thanks to all who supported the event.

DR ELENA PILETSKA SELECTED TO SIT ON KEY PANELS

Dr Elena Piletska has been selected to sit on the investment assessment panel for the Biofilms Innovation Knowledge Centre (IKC), helping to manage an investment of approximately £12.5M. In addition, Elena has been appointed by COST as the External Expert for the evaluation of proposals submitted for the Open Call OC-2016-2. We wish Elena well in these roles.

Outreach News

Dr Barbara Villa Marcos and her team of staff and ambassadors have been busy with outreach work over the past few months:

22nd November: *Chemistry of Fireworks event* for around 30 year 10 students at Sir Jonathan North Community College as part of their Chemistry Week.

30th November: 14 students (Years 1-3) from the Leather department at Northampton University came to visit us in collaboration with ChemSoc. We ran a couple of experiments with them (Fingerprinting and polarimetry).

12th December: *The Chemistry of Esters* event, 20 year-12 students from Hinchingbrooke School visited the department.

13th December: 14 Year 13 students from Biddenham School came to the department on a Spectroscopy visit.

15th December: The department hosted the RSC Top of the Bench Competition. Dylan and Barbara ran a "Chemical Magic" demo as part of the event. 14 schools from Leicestershire participated, with 56 students in total from years 7-9.

Jan-Feb: We have started outreach activities for the RSC-funded widening participation (WP) project that we started in 2014. For the last month we have worked with 200 students in year 8 and 180 students in year 9. Each pupil has participated in three different sessions so far. 20 undergraduate students (years 1-4) and 7 postgraduate students have participated so far this year.

DR RICHARD BLACKBURN DELIVERS SEMINAR AT THE UNIVERSITY OF LINCOLN

Dr Richard Blackburn was invited to the University of Lincoln's Chemistry department to deliver a seminar on his research and teaching at Leicester. He gave a talk on 'Natural Products: synthesis and applications for drugs, sensors & teaching'.

DEPARTMENT SUBMITS SILVER ATHENA SWAN APPLICATION

In November the Athena SWAN Self-Assessment Team, chaired by Dr Alison Stuart, submitted a Silver Athena SWAN application. We will hear whether or not the submission has been successful later in the year. Thanks to the committee, chair and other staff members for all their hard work.