

Chemistry Newsletter

Autumn 2017

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Introduction



Professor Gill Reid, Head of Chemistry

As Head of Chemistry, it is my pleasure to introduce our inaugural Chemistry Newsletter. The newsletter, which will be published twice a year, is intended to enable all members of the department to share their own individual successes, as well as team achievements, whether personal or professional. Success in Chemistry at Southampton now and in the future is undoubtedly down to the spirit, commitment and collegiality of everyone in our community. We can rightly be extremely proud of all the great things that have happened over the last year, and this is one way to enable us all to reflect on and celebrate these successes.

I hope you will all contribute your news to future editions so that we can enjoy sharing it!

Do you have an article you wish to contribute to a future edition? Please email Lynda Brown L.J.Brown@soton.ac.uk or Dawn Dunlop D.Dunlop@soton.ac.uk

Important Dates

University Open Days

Saturday 9 September 2017
Sunday 10 September 2017
Saturday 14 October 2017

Postgraduate Open Day

Wednesday 22 November 2017

Freshers:

23 September- 6 October 2017

Semester 1:

Thursday 28 September 2017 -
Saturday 27 January 2018

Christmas vacation:

Sunday 17 December 2017 -
Sunday 7 January 2018

Semester 1 exams:

Monday 16 January - Friday 27
January 2017

Semester 2:

Monday 29 January 2018 -
Saturday 16 June 2018



2015 Silver Award Winners - Chemistry at Southampton

Celebrations and congratulations

Congratulations to PhD student Stephanie Chapman who is one of 420 young international scientists selected to attend the 67th Lindau Nobel Laureate Meeting. The prestigious meeting of minds took place in June in Germany.

Southampton Chemistry graduate David Evans has been named Global Winner of the Chemical and Pharmaceutical Sciences category at the 2016 Undergraduate Awards (UA).

Well done to all our undergraduate winners at the MChem poster day pictured below



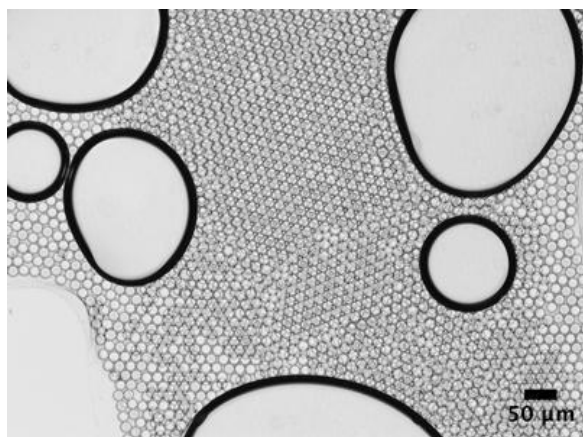
Left to right: Annabelle Collins, June Lovitt, Alice Berry, Laura Vile and Samuel Monday with lecturer, Geoff Hyett.

Phil Bartlett, Professor of Electrochemistry, has been honoured for his 30 year-long collaboration with fellow scientists in Argentina. He received the Dr Luis Federico Leloir award from the country's Science Minister Lino Barañao in recognition of his contribution to international scientific co-operation.

Blue Carter (PhD student with Jon Kitchen) has been awarded a Leverhulme Study Abroad Studentship to spend 2 years at Karlsruhe Institute of Technology in Germany.

Catrin Sohrabi (PhD student with Ali Tavassoli) has been awarded the people's choice in the "Researcher Photography Competition" for her photo of droplets

<https://www.southampton.ac.uk/doctoral-college/research-community/festival-2017/photo-comp-2017.page>



PhD Awards 2016/17

Congratulations to the following students on the award of their Doctor of Philosophy at the summer degree award Ceremonies in July.

Characterisation and Analytics

Efstathios Elia

Ammar Nasif

Krina Patel

Chemical Biology, Diagnostics and Therapeutics

Amber Murch

Gemma Packer

Alice Parnell

Justyna Smus

Joseph Watts

Rachael Wilkinson

Computational Systems

Joshua Campbell

Michael Criddle

Thomas Gee

Maximillian Phipps

Electrochemistry

Matthew Burton

Hairul Hamzah

Sandy Kerr

Will Richardson

Functional Inorganic, Materials and Supramolecular Chemistry

Davide Ansovini

Marzia Galli

Thomas Ran

Magnetic Resonance

Graeme Finch

Zenawi Welderrufael

Organic Chemistry: Synthesis, Catalysis and Flow

Alexander Leeder

Marc Radigois

Majdouline Roudias

Gareth Sheppard

Sun Wei

Web Science

Richard Fryson

Celebrations and congratulations

Congratulations to all our graduating undergraduate prize winners; these included:

James Easton, John Mellor Prize;
Marley Samways, Alan Carrington Prize;
Eleanor Reid Judith Corker Prize;
Rajan Samra Progression Award;
Elayda Hearne Progression Award;
Joe Fear, A.E. Clarence Smith;
Marley Samways David Runciman Boyd Prize;
Nadia Kovalenko Outstanding Research Placement Project;
Sarah Laughlin, R.E. Parker Project;
Lawrence Marinaccio R.E. Parker Project;
Chris Brett Roger Parsons Prize.



*Left to right: Prof Andrea Russell, Sarah Laughlin,
Lawrence Marinaccio, Prof Richard Brown*

Faculty Gold Medal Award winners include:

Chris Brett, Joe Fear, Mohammed Subhan, Marley Samways, Kelly Rees, Thomas Clough, Troy Bennett, Edward Briggs, Ryan Squire;

And the winner of our newest award the Ishbell Campbell Award, for his contributions to outreach, was Tim Deehan.

Southampton Chemistry research fellow Matthew Potter was successful in gaining a place on the Global Young Scientists Summit (GYSS) in Singapore in January 2017. This five day event brought together more than 250 early career researchers and PhD students with 21 distinguished scientists, including Nobel Prize winners.

Jamie Lewis (PDRA with Steve Goldup), who is currently a Marie Curie Fellow, has been awarded an Imperial College independent research fellowship.

Frank Longford (PhD student with Jeremy Frey) and Mathieu Denis (PhD student with Steve Goldup) have both been awarded an EPSRC Doctoral Prize following the recent round of applications and interviews.

A recent article in Southampton Connects magazine celebrated the fantastic work of carried out by Chemistry's talented glassblowers. The article interviews Lee Mulholland, Przemyslaw Tryc and Paul Frampton and can be found here: <https://connects.soton.ac.uk/feature/our-glassblowers-are-helping-to-change-the-world-for-the-better/>



*Paul Frampton, Lee Mulholland and
Przemyslaw Tryc*

First year PhD student Tom Ellaby (with Prof Chris Skylaris) has won the poster prize at the RSC Theoretical Chemistry Group graduate student meeting which was held in Southampton in May. The title of his poster was "Ideal vs Real: Simulated Annealing of Experimentally Derived and Cuboctahedral Platinum Nanoparticles".



Dr Nuria Garcia-Araez (pictured above) has been awarded a prestigious Fellowship from the EPSRC for her research into lithium-air and lithium-sulphur batteries. This personal award will enable Nuria to spend time over the next five years exploring whether these promising technologies could eventually power the next generation of electric cars.

Building news

Last year's Building 29 estates project involving the new roof and modernisation of fume cupboard extraction plant has gone very well. Issues with vibrations have also been resolved. As part of this project, simulation owls were placed in key locations to help reduce the pigeon population around the buildings!

Meanwhile, the project to improve Building 27 is underway. This includes upgrades to the roofs, improvements to the night door exterior and interior. Some corridors are having redundant services removed and being redecorated. The second floor academic offices are now complete and work is underway on the third floor and a new roof over the quadrangle. The final result should be an improved working environment for all.

Other minor works included a new bin store, a new surface to the car park for the chemistry stores and recently completed water mains and electrical supply works, giving a more robust and reliable infrastructure and enabling more efficient maintenance in the future.



Have you spotted Chemistry's newest head turning residents?

Promotions

Congratulations to staff that have been recently promoted:

Thomas Logothetis to ERE Level 6, and Steve Goldup and Sumeet Mahajan to ERE Level 7.

New Staff profiles



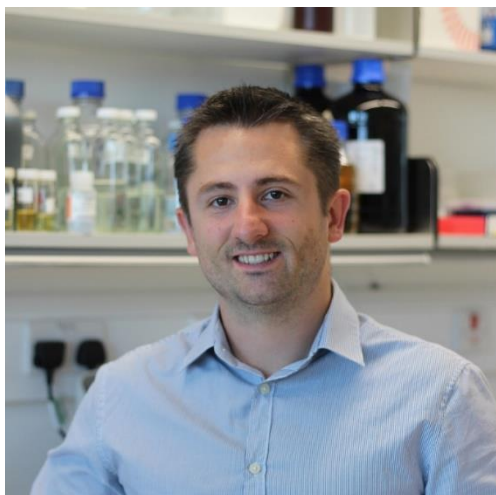
Dr Peter Wells

Peter Wells returned to Chemistry at the University of Southampton as a lecturer in August 2016, as part of a joint appointment with Diamond Light Source. His research is focussed on the design of nanomaterials, their application in catalysis, and using in situ and operando spectroscopy to learn more about how they are formed and what influences their properties.

Peter has spent a significant time at the University of Southampton, first completing his PhD with Prof. Andrea Russell (2003-2007) and subsequently working with Prof. John Evans as a senior research fellow (2007-2011). Working with both John and Andrea he developed a passion for synchrotron radiation studies of catalytic systems. After leaving Southampton he took a position (2011-2016) at the newly formed Research Complex at Harwell (RCaH), working for UCL as part of a fledgling catalysis consortium. At the RCaH Peter played an instrumental role in growing a small team into a large, well-funded (> £13M) national programme that is now 'The UK Catalysis Hub'.

Peter's connection to Southampton goes beyond his professional links; he met his partner, Suzanne Pelfrey, whilst completing their PhDs with Andrea Russell and they now have two daughters, Isla and Georgia. Outside of work, Peter spends his spare time with his young family, often involving jumping in muddy puddles, trips to Peppa Pig world, and going for a babycino!

New Staff profiles



Dr Matt Baud

Matt is from the little town of Morbier (France).

He obtained his BSc from the Université de Besançon in 2006 and MSc from the Ecole Polytechnique Fédérale de Lausanne in 2008.

He then moved to the UK to undertake PhD studies at Imperial College London under Dr Matthew Fuchter, working on the development of new chemical probes for epigenetics. After obtaining his PhD in 2011, he moved to the University of Cambridge to work as a postdoc with Professor Alessio Ciulli, followed by a short stay at the School of Life Sciences at the University of Dundee. In 2013 he obtained a MRC Career Development Fellowship to be held at the Laboratory of Molecular Biology in Cambridge, within the group of Professor Sir Alan Fersht.

He joined Chemistry at the University of Southampton in September 2016. Matt's research lies at the interface of the chemical and biological sciences, and focuses on the development of new chemical approaches to study biological systems. *"Outside the lab, I try to catch up on the latest breakthroughs in other scientific areas ranging from particle physics and cosmology, to archaeology and clinical sciences. I also enjoy a breath of fresh air outside the city and go hiking, skiing and have a kickabout with friends."*



Dr Sam Thompson

Sam joined Chemistry in October 2016, as a Lecturer in Chemical Biology and Medicinal Chemistry. His main research area is the use of organic synthesis to address problems in biology and medicine – especially those related to the recognition, mimicry, and modification of proteins.

Sam grew up on a farm in the Lincolnshire countryside before going up to Exeter College, Oxford for his undergraduate degree in Chemistry. Sam then completed a PhD with Dr Martin Smith on natural products and enantioselective synthesis at Cambridge. Returning to Oxford in 2009 he did a short medicinal chemistry postdoc aimed at developing small molecule drugs for cancer targets. Between 2010 and 2016 he held Junior Research Fellowships at Pembroke College and Lady Margaret Hall, and was the team leader for the group of Prof. Andrew Hamilton. Sam is also a passionate teacher having taught organic Chemistry at Christ Church, Oxford for several years. At Southampton he is giving organic synthesis, materials, and chemical biology courses to years three and four.

Outside of the lab Sam and his wife Hannah, who is also a synthetic organic chemist by training, are enjoying exploring Highfield and the beautiful Hampshire countryside with their daughter Olivia who was born just after the move to Southampton.

UG contributions to research papers

Undergraduate projects in Chemistry contribute widely to the success of our department's research output, we would like to celebrate this by highlighting papers published with our undergraduates as authors.

June Lovitt:

"Coordination chemistry of N-picolyl-1, 8-naphthalimides: colourful low molecular weight metallo-gelators and unique chelation behaviours"

Inorg. Chem. Front 4, (2017), 296-308.

DOI: 10.1039/C6QI00498A

Chris Wickens:

"NMR of molecular endofullerenes dissolved in a nematic liquid crystal", Phys. Chem. Chem. Phys. 19 (2017), 11793–11801.

DOI: 10.1039/C7CP00906B.

Stuart Sawyer:

"Origins of Small Proton Chemical Shift Differences in Monodeuterated Methyl Groups" J. Org. Chem. (2017), 8943–8949.

DOI:10.1021/acs.joc.7b01356.

Steve Worswick:

"Rationalisation of Anomalous Pseudocontact Shifts and Their Solvent Dependence in a Series of C₃-Symmetric Lanthanide Complexes", J. Am. Chem. Soc. (2017) epub

DOI: 10.1021/jacs.7b07094

Michael Potter:

"Highly enantioselective synthesis of alkylazaarenes derivatives through a Michael-Michael-Aldol cascade reaction", Eur. J. Org. Chem. 3 (2017), 719-725.

DOI: 10.1002/ejoc.201601491

Sarah Akponasa and Aaron Scott:

"Investigating the Structure Directing Properties of Designer 1,8-Naphthalimide and Amphiphilic Sulfonate Anions and Their Fe(III) Thiosemicarbazone Complexes", Cryst. Growth Des. (2017) web pub.

DOI: 10.1021/acs.cgd.7b00534

Anthony Carter and Harry Klein:

"Synthesis and characterisation of Fe (III) and Co (III) complexes of thiazole-containing thiosemicarbazone ligands", Inorganica Chimica Acta, 463 (2017) 126–133

DOI: 10.1016/j.ica.2017.04.008

Orla Sheehan Pundyke:

"Accurate force fields and methods for modelling organic molecular crystals at finite temperatures", Phys. Chem. Chem. Phys., 18, (2016), 15828-15837

DOI: 10.1039/C6CP02261H

Josh Whittam:

"Effect of oxidative surface treatments on charge storage at titanium nitride surfaces for supercapacitor applications", J. Mater. Chem. A, 5 (2017), 4550-4559

DOI: 10.1039/C6TA08308K

Technicians make it happen!



Alistair Clark

Although technicians are often thought to work "behind the scenes" they play a really crucial role in the life of Chemistry, in the teaching labs, stores, glassblowing and mechanical workshops and as specialists in analytical instrumentation and research techniques. Two of the longest serving members of Chemistry staff are technicians. Rob Dalley has worked in the mechanical workshop since 1977 and Alistair Clark who has been an integral part of the Electrochemistry group since 1980.

Alistair was initially a school teaching laboratory technician before moving to the University in May 1980 to look after the MSc Electrochemistry teaching lab. He was interviewed by Derek Pletcher and then line managed by Gamini Gunawardena. The role was primarily to support the MSc teaching activities and Alistair was supported by the department to study for a BTEC ONC in Chemistry at Southampton City College, followed by a BTEC HNC at Southampton Institute of Higher Education (now Southampton Solent University). During the late 1980s and early 1990s the MSc was suspended, but Alistair worked for other staff within the research group and was seconded to the Wolfson Centre for a short time.

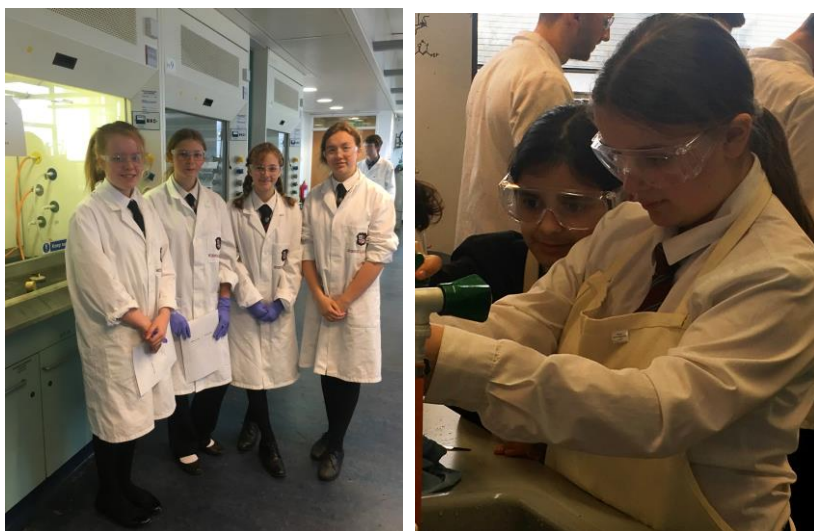
Over the years his role has evolved from a primarily teaching support role to a more research focused role. He is now responsible for the Electrochemistry SEM (scanning electron microscope) including its operation, management and maintenance; as well as training of new users. Electrochemistry has developed from being a subsection of Physical Chemistry to a high profile research section and Alistair is also responsible for their research facilities on levels 6 and 7 of Building 29.

Alistair's enjoyment for the job has continued for many years because he has found the work to be varied and he can also organise his own work schedule keeping the role interesting. He is currently working 2.5 days a week until full retirement in 2018, when he is hoping to spend more time pursuing his hobbies.

Outreach

This year has seen our Outreach programme grow significantly, with much appreciated support from undergraduates, postgraduates and staff alike. In addition to careers talks and workshops at schools and colleges, including our slime and silly putty workshop for primary/secondary schools, and the RSC Spring Family Lecture, our in house events really thrived.

The programme started with our Christmas Science Lecture, including Dr Paul Wilson's popular and ever-evolving science show, which he continues to deliver to different audiences.



January marked our benchmark Twilights lab practical event for Year 12 A-level students, in the teaching lab. Running annually since 2006, it has grown in size, and this year saw 309 students from 24 schools attend over nine days. They tried out new practical skills, extracting the triglyceride, trimyristin, from nutmeg, purifying and analysing it by TLC and IR spectroscopy, and determining the melting point. Our thanks go to Prof. G. John Langley, for additional MS analysis, which was provided as part of a data pack to teachers, and we thank lab technician, Diana Dias-Fernandes, for a stellar effort in setting up each day!

The end of March saw our two-day Chemistry Festival, where 13-14 year olds came to test their forensic skills in our teaching labs, under the guidance of Thomas Logothetis and Colin Flowers.

The spring also saw a new set of 12 Natural Product Masterclasses for Year 10 GCSE students, extracting and analysing caffeine from tea, in a similar format to our January Twilights. Piloted last summer, these ran from March to May, accommodating 305 students from 17 schools and a wide-range of socio-economic backgrounds. We are very thankful for generous alumnus funding, which also provided financial support to schools to enable students to attend, who would not normally be able to do so.

Due to the popularity of the January Twilights, we ran a new Summer Twilight event in June with 99 students attending over 5 days, analysing the food dye content of cough sweets using colorimetry. They were also introduced to UV-vis spectroscopy, and conducted IR spectroscopy and TLC as part of their visit.

In early July, we invited primary schools back for our Science All Around Us event exploring the worlds of crystals, light & colour, sound, fruit flies, and slime and silly putty, followed by Paul Wilson's fun science show.



The year finished with our long-standing Year 12 Work-Shadowing days, and a new Chemistry Experience Day, incorporating both work-shadowing and problem-solving lab skills. A very successful set of events to finish, which could not have happened without support from staff and students from across the entire department.

Selection of feedback received:

"The event was very well organised and very interesting! It was great to have a taster of how the more complicated practicals in chemistry work, and extremely helpful to have so many people there to ask about chemistry as a whole and about a future in science - definitely has helped me decide on what to do after college."

- Student from Barton Peveril College

"Chemistry has more real-life applications and is much more important than I ever realised! A PhD is now massively appealing."

- Student from Torquay Boys Grammar School

"I have really enjoyed the day - I got a real insight in to what different types of research are available."

- Student from Aylesbury High School

Beyond Chemistry

Alex Teuten

Alongside his PhD studies Alex Teuten (Brown group), is one of England's top distance running talents *"I started running when I was 8; going for runs with my Dad. I had a successful race debut in my junior school cross-country, finishing 2nd and after this I started training regularly at City of Portsmouth AC."*

Alex competes in road and track races, but particularly enjoys cross-country *"There are less tactics involved so it's simply the case where the strongest, fastest athlete wins"*. Alex has a tough training schedule *"summer training sessions are more exerting and on top of them I do extra weight training for leg strength. I typically average 70 miles a week April-August and 75-80 miles a week the rest of the year."*

The highlight of Alex's 2017 is winning the British University Cross-country claiming his first national title. Alex is now targeting a GB vest at the European Cross-country championships in November and is looking forward to the Great South Run in October.



Alex crossing the line at BUCS Cross-country February 2017

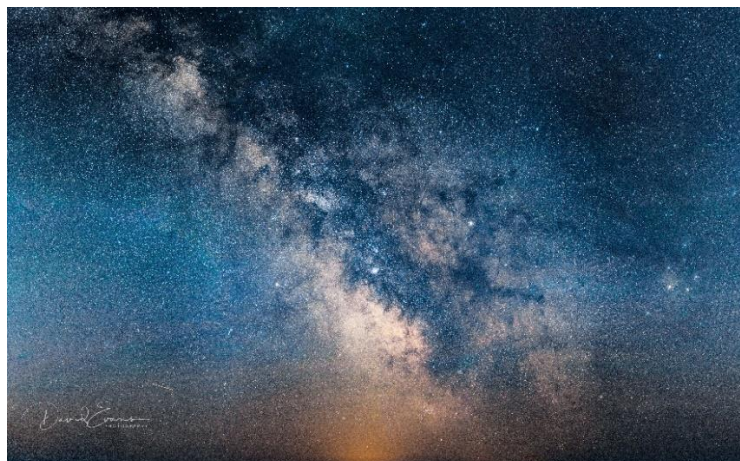
David Evans

Alongside his PhD studies, David Evans (Linclau group) is a keen photographer. *"I never really had a creative outlet during my undergraduate years and thought it was time I found something to do that wasn't just analytical and scientific. A friend let me borrow their camera and I found it scientific enough to keep me mentally engaged but also allowed me to be creative"*.

David's favourite subject to photograph is the night sky, although it can be challenging needing a clear sky with no light pollution.

David is working towards recognition as a Licentiate of the Royal Photography Society and will be president of the university photography society next year. Highlights of 2017 include official photographer duties at Common People and 22 university balls, and trips abroad - to Mallorca to photograph a super yacht and to Mount Vitosha in Bulgaria.

For budding photographers David recommends surrounding yourself with other photographers *"I had an excellent group of friends to help nurture my skills and develop my passion"*.



Taken by David, July 2017 overlooking the English Channel at Swanage

The science of cupcakes

In April two Chemistry PhD students – Harriet Clarke and Samantha Hawken won top prizes at the University's "Bake your PhD" competition.

President and Vice-Chancellor Professor Sir Christopher Snowden's top picks:

- Winner: Samantha Hawken (Chemistry)
- Runner Up: Harriet Clarke (Chemistry)

People's Choice votes:

- Runner Up: Samantha Hawken



Harriet Clarke with her Bake your PhD cake

Harriet studies the synthetic transport of anions across lipid membranes. *"We make small organic molecules which can encapsulate the anion and mask it from the hydrophobic interior of the membrane whilst transporting it across."*

Harriet's cakes showed the transport of fluoride across lipid membranes via a series of strapped calixpyrroles. The Cupcakes represented the anions and lipids.

"I had the idea in my head leading up to the competition. I spent a couple of evenings making the components and spent the night before the competition assembling the cakes. Trying to make the calixpyrrole structures out of fondant was tricky!"



Samantha Hawken (right) receiving her certificate



Samantha's prize winning Bake your PhD cake

Samantha's PhD involves designing molecules suitable for the growth of thin film semiconductors, she managed to incorporate all of the aspects into her prize-winning cake creation.