

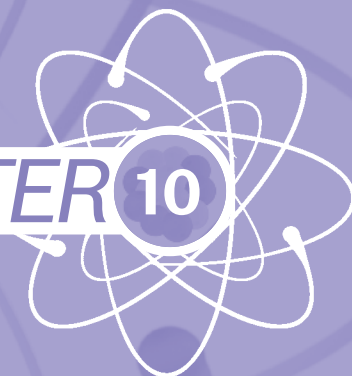


The  
University  
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Sheffield.

# Chemistry Newsletter

## CHEMISTRY NEWSLETTER 10

Issue 10 October 2010



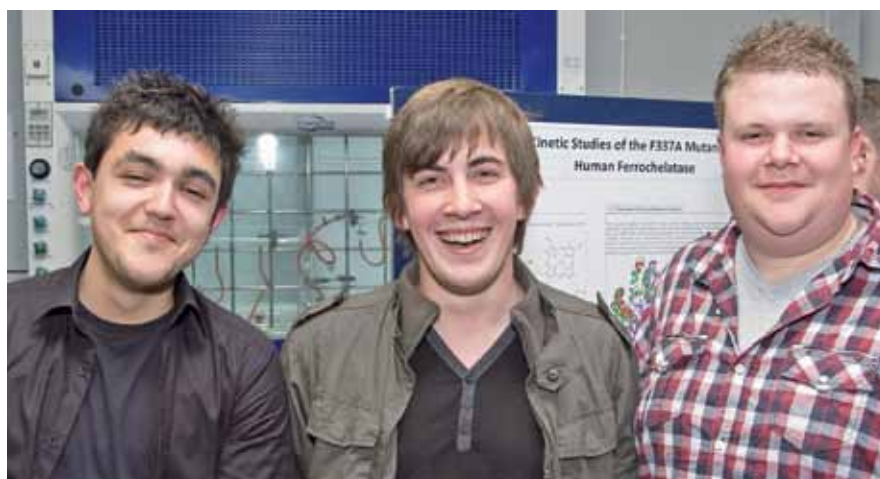
### Winning Research

During their final year all our M. Chem. students carry out a research project and quite often they are so successful that their work results in co-authorship of academic publications. At the end of the academic year, students present a poster summarizing their achievements with prizes being awarded to outstanding performers. At our latest poster day, we were honoured to have an outstanding scientist as a guest judge who also awarded the final prizes.

Prof. Robert G. Bergman is the Gerald E. K. Branch Distinguished Professor at the Department of Chemistry, University of California, Berkeley, which is currently rated as the top chemistry department in several worldwide university rankings. Following a ballot that involved their fellow students as well as Prof Bergman and Chemistry staff, the three winners were declared to be Ben Ahmady, Ed Cochrane and William Durrant.



Prof Bergman listens intently



And the winners are...

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### Chemistry at Sheffield

With an annual intake of around 160 – 170 talented undergraduate students a year, Chemistry is one of the biggest departments in the University of Sheffield. Our Undergraduate students are drawn from four different continents. Find out more at:

[www.shef.ac.uk/chemistry/](http://www.shef.ac.uk/chemistry/)

# Graduation



Graduation day in July is always a highlight of the academic year. After the ceremony itself, students and their families are invited back to the department to toast their success, where - thanks to several generous academic and corporate sponsors - prizes for outstanding academic achievers are announced. This year, a distinguished alumnus of the department gave out the prizes. After his chemistry degree at Sheffield, Prof. Vernon C. Gibson has had a hugely successful academic career culminating in him taking up Sir Edward Frankland BP Chair of Inorganic Chemistry at Imperial College, London which was previously held by the Nobel Laureate, Prof. Sir Geoffrey Wilkinson. In 2008, he became the Chief Chemist for BP, where his research interests have diversified to address the challenges of energy sustainability and climate change.



*The class of 2010 enjoy graduation*

## New Gold for the Union

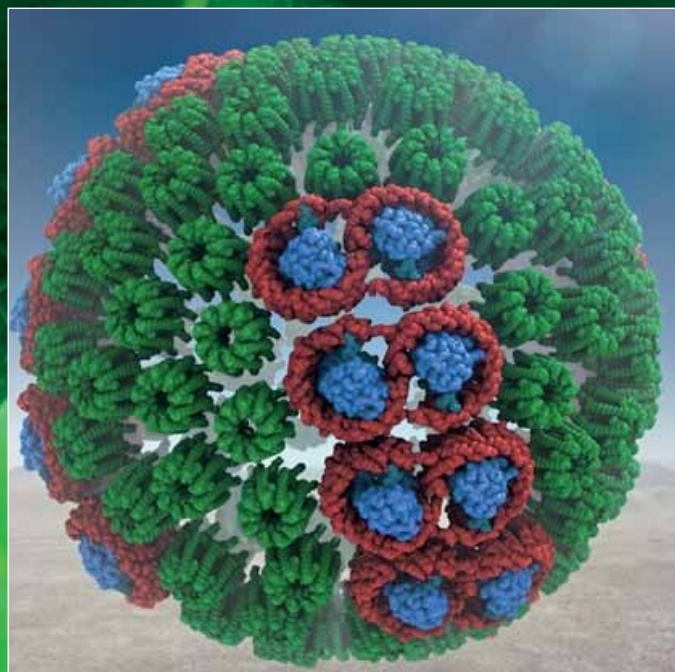
The University's much-lauded Students' Union picked up another gong during the summer. It is only one of two in the country to receive a Gold Award in the Student Union Evaluation Initiative (SUEI), an assessment that takes into account the values, achievements, leadership, outcomes and rationale of the candidate institution. The Union, which offers more than 300 sports clubs and societies, was also ranked joint first in 2010's Times Higher Education Student Experience Survey.

Through the summer, the finishing touches to a £5million renovation of the Union building were completed. The project, which began in November 2009 has improved disabled student access and includes a striking new main entrance complete with a gold finish, leading into a central atrium housing an expanded Union Shop with a wider range of Fairtrade products.



# Collecting Sunlight Naturally

Two professors in our department, Graham Leggett and Steve Armes, head a team of researchers awarded a multi-million pound grant aimed at creating nanotechnology devices to convert sunlight into storable energy. As Graham explains; "Plants collect and use sunlight with extraordinary efficiency, but they do so by very different mechanisms from engineering systems. Our goal is to use biologically inspired design principles to assemble synthetic devices. For solar energy generation this is an enormously important challenge: huge quantities of energy fall on the Earth every day from the sun and we utilise only a small portion of it. By learning from biological systems we may learn how to use this abundant, renewable energy source for the greater good of mankind." Using this approach, in the future it may be possible to assemble biological and biologically inspired synthetic molecular components onto surfaces creating synthetic "nano-leaves".



A synthetic assembly of biomolecular photosynthesis components

## Quick, Before it Melts

Andrew Ross - who is currently working towards a PhD in organic chemistry as part of Prof Richard Jackson's research group - has secured an entry in The Guinness Book of Records. With the help of staff from the award-winning Our Cow Molly ice cream company, Andrew set out to break the world speed record for making a litre of ice cream. After much planning, he made his attempt at the five-day Sheffield Food Festival held in the summer holidays, however the method he used is not one recommended for home use.

Although Andrew started with a traditional mixture of cream, sugar and vanilla, he then added something far less conventional: one litre of liquid nitrogen. By rapidly stirring in his -198 °C secret ingredient, Andrew smashed the previous record of 18.78 seconds, producing ice cream in 10.34 seconds. An impressed Lord Mayor of Sheffield declared that the resultant vanilla ice cream "tasted delicious."

After his team had successfully creamed the record, Eddie Andrew, the local farmer who heads up Our Cow Molly ice cream said, "the university has a fantastic chemistry department and they do a great job inspiring young people to study chemistry after school. Our ice cream record is radical and wouldn't have been possible without skilled chemists."

If you want to see just how quick Andrew works, see him breaking the record at:

[www.youtube.com/watch?v=TgPNMjKRtlk&feature=player\\_embedded](http://www.youtube.com/watch?v=TgPNMjKRtlk&feature=player_embedded)

**He really is a Fast Food Scientist – sorry we couldn't resist the pun.**



In goes the liquid nitrogen and out comes the ice cream

## Environmentally Kinder Explosives?

It seems like a contradiction in terms, but a recent discovery by Dr Peter Portius may lead to "greener" explosives. Currently, most explosive are kick started using a highly sensitive lead azide detonator. However the use of this pernicious heavy metal compound leads to harmful environmental contamination. One possible alternative detonator is Silicon tetraazide, a nitrogen rich energetic compound that is free of elements that would cause environmental concern. Unfortunately, as Peter explains this colourless liquid is highly explosive and incredibly hard to handle: "[exploding] 50 mg of the compound will make a dent into a stirrer hot plate. A sample will also detonate upon the slightest provocation; even touching or scratching it will lead to its detonation

In a recent paper published in the prestigious research journal *Angewandte Chemie International Edition*, Peter's group and their collaborators in Germany reports on a silicon tetraazide derivative stable enough to be handled and stored in a pure state, which can also safely be used for further chemical transformations



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News

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## Alumni

Are you an Alumnus of the Department?

Are you an Alumnus of the Department? We would really love to know how you are getting on. Tell us your news and we will share it with our readers. Send your stories and photos to [chem-alumni@sheffield.ac.uk](mailto:chem-alumni@sheffield.ac.uk) and we will endeavour to include your information in future editions of this Newsletter

## New staff

The Department makes teaching a priority. So, several members of staff are solely dedicated to teaching duties. One of our regular teaching fellows, Dr Jennifer Burnham, is currently away from the department on maternity leave. While Jenny is away, Dr Lindsay Hewison has stepped into cover her teaching commitments. Lindsey should know the ropes as she was undergraduate in the department and has just graduated with a PhD in bio-inorganic chemistry. We welcome Lindsay to the team.



Further information on all the courses the department offers can be found at its web site:

[www.shef.ac.uk/chemistry/](http://www.shef.ac.uk/chemistry/)

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