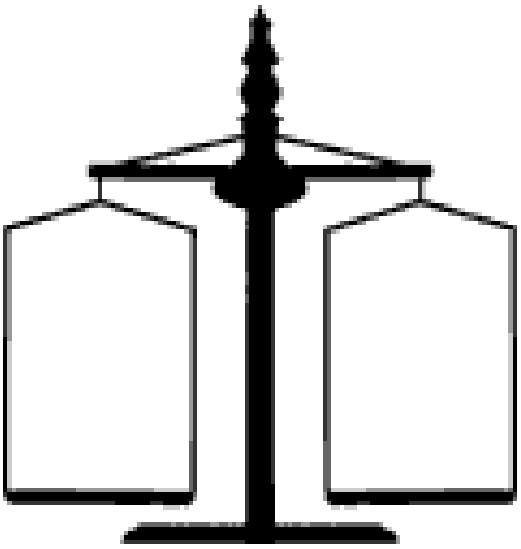
Oxford University

Scientific Society



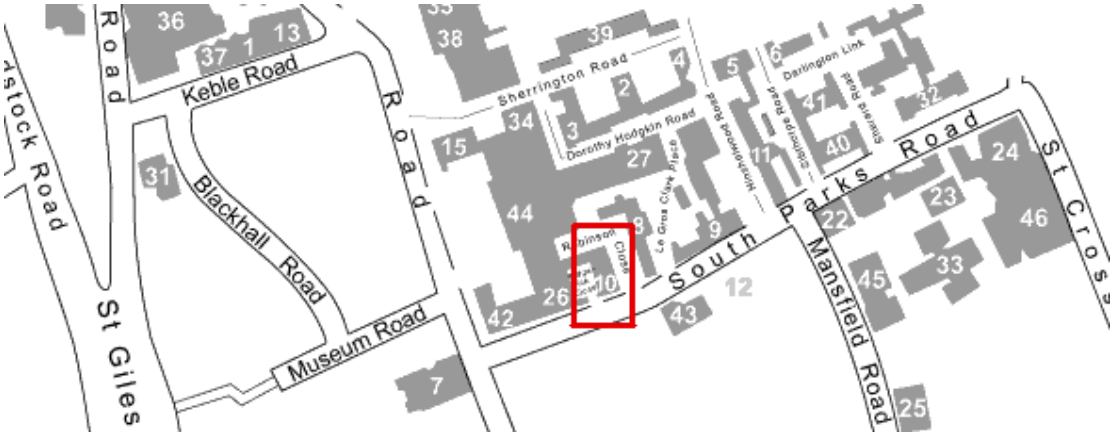
Hilary Term 2008

http://users.ox.ac.uk/~science

Hilary Term 2008

Welcome to the Oxford University Scientific Society Termcard for Hilary Term 2008. We have lots of amazing speaker events lined up for this term, covering a wide range of cutting edge areas of science.

All talks will be held on **Wednesday** of the week in the **Inorganic Chemistry Lecture Theatre** on South Parks road, starting promptly at **8.15 pm**.



In addition, we are planning a visit to the “ancient” Bodleian Archives in the Oxford City. Our sponsor, QinetiQ, will also be holding a careers evening/ corporate presentation this term.

Look out for our email updates and check the website **(http://users.ox.ac.uk/~science)** for news of all talks and events. We look forward to seeing you this term.

~The Committee~

Term Diary

2nd week

The Emerging Discipline of Quantum Nanoscience
Professor Andrew Briggs
Department of Materials, University of Oxford

Career Alternatives for Scientists
11.15 am - 12.15 pm, Saturday 26th January
Exam School

3rd week

The Intelligence of Cells
Professor Brian Ford
Broadcaster and writer, Leicester

4th week

Molecules by the Million - the use of computers in drug discovery
Professor Graham Richards
Department of Chemistry, University of Oxford

6th week

Mathematical Modelling of Solid Cancer Growth
Professor Philip Maini
Mathematical Institute, University of Oxford

QinetiQ: careers evening/ corporate presentation
7pm, Tuesday 19th February
Danson Room, Trinity College

8th week

Lucky Life & The Magic Furnace
Mr Kamil Fadel
Palais de la découverte, Paris

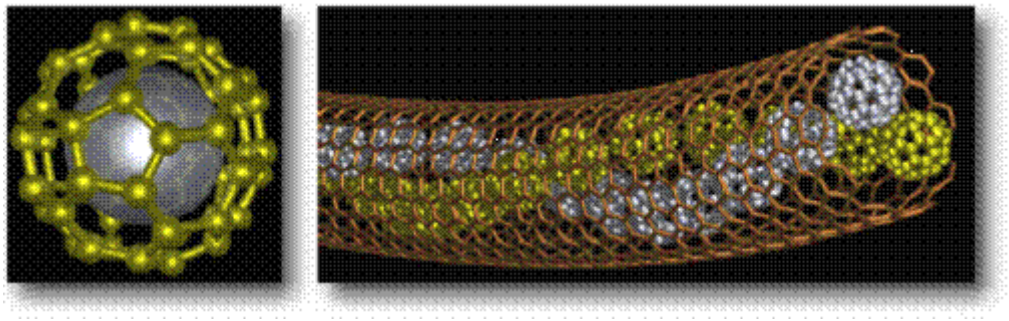
All talks will be held on **Wednesday** of the week in the **Inorganic Chemistry Lecture Theatre** on South Parks road, starting promptly at **8.15 pm**.

Second Week – Wednesday 23rd January

The Emerging Discipline of Quantum Nanoscience

Professor Andrew Briggs

Department of Materials, University of Oxford



As materials science and technology move inexorably to the nanoscale, it becomes important to elucidate how small differs from big. Quantum nanoscience emerges because as materials become very small quantum states emerge, which can be measured and controlled. Elementary quantum effects include discrete energy levels and the probability that they are occupied. Such effects have long been used in nanomaterials such as colloidal quantum dots.

It is possible to go further, and to see the more exotic quantum phenomena of superposition and entanglement in nanomaterials. The quantum state may range from charge in coupled quantum dots to flux in superconducting circuits containing Josephson junctions. Many experiments have been done on electron spins, which are sufficiently isolated from the environment to have long-lived states, but nevertheless allow adequate coupling for manipulation and measurement.

The miraculous molecule $N@C_{60}$ consists of a single atom of nitrogen in a carbon cage. The nitrogen atom behaves as though it were almost perfectly isolated, thus permitting atomic physics experiments in a structure of molecular materials. The electron spin can be manipulated with exquisite precision, and tricks can be

performed in combination with the nuclear spin. Fullerene molecules can be assembled in a single walled carbon nanotube, thus providing a new family of materials for the emerging discipline of quantum nanoscience.

Professor Briggs is the Professor of Nanomaterials and the Director of Quantum Information Processing Interdisciplinary Research Collaboration (QIPIRC).

Second Week - Saturday 26th January

Career Alternatives for Scientists

11.15 am - 12.15pm, Exam Schools

This event, which forms part of the wider Alternative Careers and Volunteering Fair being held on Saturday 26th January at the Exam Schools, will give those studying science a chance to hear about potential careers outside of research and development. Areas to be covered include science communication and science policy.

No need to book, just turn up. More details on www.careers.ox.ac.uk in due course.

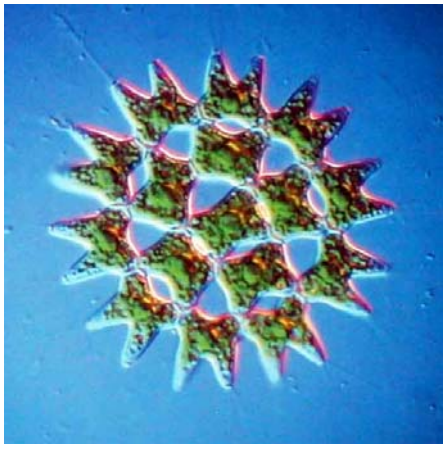
Third Week – Wednesday 30th January

The Intelligence of Cells

Professor Brian Ford
Broadcaster and writer, Leicester

Professor Ford will be showing some remarkable unseen videos of microbes in his talk!

Intelligence, we believe, resides in cell populations. Current preoccupations with molecular cell biology interpret the behaviour of cells in mechanistic terms. Professor Ford looks to the era of biosciences that lies in the future, and concentrates on the complexities of organismal biology. This talk reveals cells as essentially autonomous and ingenious, and offers a futuristic model of how brains function.



Professor Ford is a Fellow of Cardiff University, Member of Gonville and Caius College, University of Cambridge, an Honorary member of Keynes College, University of Kent, former Fellow at the Open University and Visiting Professor at the University of Leicester. Ford was the first British President of the European Union of Science Journalists Associations (Brussels) and founding Chairman of the Science and Technology Authors Committee at the Society of Authors (London). Ford is a long-standing Fellow of the Linnean Society, serving as a member of their council, as their Zoological Secretary for many years, and is their honorary surveyor of scientific instruments. He is also a Fellow of the Institute of Biology, a former member of their council and chairman of their history network. Ford edited the book "The first fifty years" which is devoted to the history of the Institute of Biology. Among many awards, in 2004 he was awarded a Fellowship by the National Endowment for Science, Technology and Art, NESTA (London).

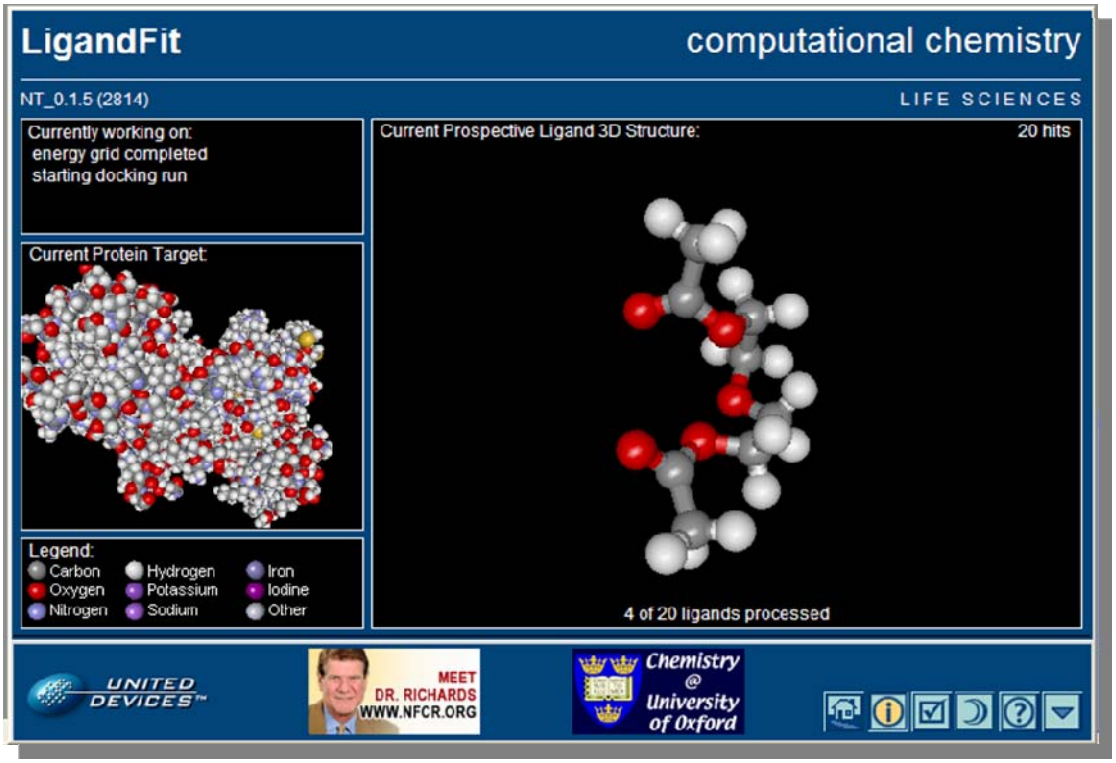
Fourth Week – Wednesday 6th February

Molecules by the Million – the use of computers in drug discovery

Professor Graham Richards
Department of Chemistry, University of Oxford

The role of computers in the discovery of new drugs, including pattern recognition and the world's biggest computational chemistry project, the use of 3.5 million personal computers in a grid covering over 200 countries.

Professor Richards is the Director of the NFCR Center for Computational Drug Discovery at the University of Oxford and Professor in the Oxford Chemistry Department. He has won the prestigious and valuable Italgas Prize for Science and Technology for the Environment.



Sixth Week – Tuesday 19th February

QinetiQ Careers Event

7pm, Trinity College – Danson Room

A world-renowned defence, technology and security company, QinetiQ combines the imagination of world leading research scientists with the rigour and forward thinking required in the defence world and brings this to civil projects. So a defence signal-processing system becomes a foetal heart monitor. A material for sound-proofing helicopters becomes flat-panel speakers. They offer careers from operational analysis, research, test and evaluation to project management – in fields from media to healthcare, and aerospace to security. Come and meet them to find out more!

For further information please go to www.QinetiQ.com/careers

Sixth Week – Wednesday 20th February

Mathematical Modelling of Solid Cancer Growth

Professor Philip Maini

Mathematical Institute, University of Oxford

Mathematical modelling is now being applied extensively to problems in tumour biology with a view to understanding the basic science and also with the longer term aim of application to clinical therapies. This talk will illustrate this with a number of examples.

Professor Maini is currently on the editorial boards of a large number of journals, including serving as the managing editor for the Bulletin of Mathematical Biology. He has also been an elected member of the Boards of the Society for Mathematical Biology (SMB) and European Society for Mathematical and Theoretical Biology (ESMBTB). Recently he was elected to the Council of the IMA.

His research projects include the modelling of avascular and vascular tumours, normal and abnormal wound healing, collective motion of social insects, bacterial chemotaxis, rainforest dynamics, pathogen infections, immunology, vertebrate limb development and calcium signalling in embryogenesis.

Eighth Week – Wednesday 5th March

Lucky Life & Magic Furnace

Mr Kamil Fadel

Palais de la découverte, Paris

It is the story of furnace...a magic furnace. For about 2000 years people tried hard to discover the source of its power. Philosophers, then scientists, chemists, physicists, biologists, geologists, monks, priests...all had something to say. All had their opinion. Darwin had his own. Huge controversies grew up, because each person thought he was right and his neighbour was wrong. Some were humiliated, some committed suicide... How scientists deciphered the mysteries of this furnace and how lucky we are is the subject of this talk.

Mr Fadel is the Director of the Physics Department of Palais de la decouverte in Paris. Since 2002, he serves as the President of "Objectif Science" for "unnatural selection" of young students (14-20) in various international science contests.

How do you go from pea soup to frozen veg?

Inventing something that helps helicopter pilots find their way through dense fog is clever. Transforming the same technology into a system that can see right through the side of a refrigerated lorry, speedily searching for drugs or stowaways as it passes through Customs, that's QinetiQ clever.

Science, engineering and technology graduates can join the real transformers at **QinetiQ.com/careers**

Mind over Matter

QinetiQ

Global Cool

Global Cool and Vodafone – Recycling Phones to Save the Planet

Climate-change campaign Global Cool and mobile network Vodafone have joined forces to recycle half a million mobile phones, sparing the earth an enormous chunk of CO2* while raising funds for planet-saving projects.

If this sounds to you like a load of old phones, it's worth bearing in mind that over 50 million handsets are currently sitting idle in UK households - and less than 5% of the 15 million that get thrown away each year are recycled. What's more, when you consider the precious metals and sell-on value of recycled phones, the estimated worth of the nation's old handsets is £1.1 billion – money which could be spent on saving the planet.

Recycling your old phone with Vodafone and Global Cool will raise money for two major projects:

Solar Aid – An ingenious global project which harnesses the power of the sun to build sustainable business communities in hot countries, bringing light and energy to the people who need it most.
For more information on Solar Aid, please visit www.solaraid.com

A Million Superheroes – Global Global Cool ambassadors Sienna Miller and Rosario Dawson want a million planet-savers to reduce their personal carbon footprint by one tonne a year, using people power to bring down the C02 emissions which cause global warming.

How to Get Involved:

Simply take your old mobile phones, batteries and accessories to any Vodafone store in the UK or pick up a freepost envelope and pop them in the post. We'll do the rest.
For more information or to order an envelope online, go to www.globalcool.org

Coming Soon:

Look out for the Global Cool Super Group in 2008, featuring world-famous artists on a track to be released exclusively on mobile, with all proceeds going towards the Global Cool Foundation to support its planet saving projects.

*Per mobile phone, manufacturing consumes 70 kWh of energy. Using an emission factor of 0.43 kg CO2 per kWh, this equates to 30.1 kg CO2 per phone. This compares to less than 1 kg CO2 for a remanufactured/reused phone.
(Source: University of Michigan and Technical University Bern, 2003).

The Committee

Senior Member:

Professor Kay Davies, FRS (Genetics)

Patrons:

Professor Peter Atkins (Chemistry)
Professor Colin Blakemore (Physiology)
Professor Richard Dawkins (Zoology)
Professor Sir Roger Penrose (Mathematics)

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Stephen Liu (Somerville)

Vice-president:

Yuki Hanyu (St. Catherine's)

Secretary:

Matt Thomas (Jesus)

Treasurer:

Aimee Guha-Roy(LMH)

Membership:

Tong Wisetsuwannaphum (St. Catherine's)

Publicity**:**

Cleo Bertelsmeier (LMH)

IT/ Web Site Officer:

Simon Smith (University)

Event's Coordinators**:**

Jojo Louphrasitthiphol(Pembroke)
Dona Dai (St. Catherine's)

Sponsorship:

Jacky Tam (LMH)

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Ning Li (New)
Yuan Ren (St.Peter's)
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