



## Proceedings of the Royal Society of New South Wales

### The 2014 programme of events – Sydney

The venue for Society meetings was the Union University and Schools Club, 25 Bent Street, Sydney unless noted otherwise.

#### Wednesday 6 February 2014

##### 1218<sup>th</sup> Ordinary General Meeting - Scholarship Presentations

Mr John Chan (Pharmacology, University of Sydney)

Ms Jessica Stanley (Chemistry, University of Sydney)

Mr Jiangbo (Tim) Zhao (Advanced Cytometry Labs, Macquarie University)

#### Thursday 29 February 2014

##### Joint Meeting with Australian Academy of Forensic Sciences

*Searching for clues: unmasking art fraud and fraudsters*

Assoc. Professor Robyn Sloggett

#### Thursday 27 February 2014

##### The Four Societies Lecture

*Questions about power in NSW*

Professor Mary O'Kane, NSW Chief Scientist and Engineer

Venue: Hamilton Room, Trade & Investment Centre,

Industry & Investment NSW

Level 47, MLC Centre, 19 Martin Place, Sydney

The Four Societies Lecture was presented in conjunction with the Nuclear Engineering Panel of the Sydney Branch of Engineers Australia, the Australian Nuclear Association and the Australian Institute of Energy.

#### Wednesday 5 March 2014

##### 1219<sup>th</sup> Ordinary General Meeting

*Big data knowledge discovery: machine learning meets natural science*

Professor Hugh Durrant-Whyte FRS, CEO of NICTA



**Thursday 3 April 2014**  
**Annual General Meeting**

Dr Donald Hector was re-elected President of the Society.

**1220<sup>th</sup> Ordinary General Meeting**

*The Jameson Cell*

Laureate Professor Graeme Jameson AO

**Wednesday 7 May 2014**

**Annual Dinner, 1221<sup>st</sup> Ordinary General Meeting**

**Royal Society of NSW 2014 Distinguished Fellows Lecture and presentation of Awards**

The Royal Society of NSW 2014 Distinguished Fellows Lecture was presented by Professor Barry Jones AC Dist FRSN.

The President, Dr Donald Hector, presented the Society's 2013 awards. The Edgeworth David Medal was presented to Assoc. Prof David Wilson, for his outstanding work on modelling HIV/AIDS and using this information to develop treatment and prevention strategies. Prof. Michelle Simmons Dist. FRSN was awarded the Walter Burfitt Medal and Prize and Professor Brien Holden AM was awarded the James Cook Medal for his work in treating myopia (a leading cause of preventable blindness), particularly in developing world countries. The Clarke Medal was awarded to distinguished geologist William Griffin, who was overseas and unable to attend.

**Tuesday 13 May 2014**

**Joint meeting with Australian Institute of Physics and the Royal Australian Chemical Institute**

*The Australian Synchrotron in the International Year of Crystallography*

**Wednesday 4 June 2014**

**1222<sup>nd</sup> Ordinary General Meeting**

*Lessons learnt? The Global Financial Crisis six years on*

Professor Robert Marks, FRSN

**Wednesday 2 July 2014**

**1223<sup>rd</sup> Ordinary General Meeting**

*What causes MS? The impact of the genetic revolution*

Professor Graeme Stewart AM



**Wednesday 6 August 2014**

**1224<sup>th</sup> Ordinary General Meeting**

*Science: essential education and the role of the Australian Academy of Science*

Emeritus Scientia Professor Eugenie Lumbers AM Dist FRSN FAA

**Wednesday 3 September 2014**

**1225<sup>th</sup> Ordinary General Meeting**

*The Fourth Dimension and Beyond: the paradox of working in unimaginable worlds*

Scientia Professor Ian Sloan AO FRSN

**Wednesday 1 October 2014**

**1226<sup>th</sup> Ordinary General Meeting**

*Australia's most spectacular environmental rehabilitation project: Phillip Island, Pacific Ocean*

Dr Peter Coyne

**Wednesday 5 November 2014**

**1227<sup>th</sup> Ordinary General Meeting**

*A Drop of Optics*

Dr Steve Lee and Dr Tri Phan, joint winners of the 2014 ANSTO Eureka Prize for Innovative Use of Technology

**Thursday 20 November 2014**

**The Liversidge Research Lecture 2014**

*Recent Studies on the Total Synthesis of Natural Products and Related Systems*

Professor Martin Banwell, Research School of Chemistry, Institute of Advanced Studies, Australian National University, Canberra

Professor Banwell is an organic chemist and is one of Australia's most accomplished researchers into the synthesis of complex organic compounds.

The Liversidge Research Lecture is presented by Royal Society of NSW, in conjunction with the University of Sydney and the Royal Australian Chemical Institute.

Venue: Lecture Theatre 4, School of Chemistry, Eastern Avenue, University of Sydney

**Wednesday 3 December 2014**

**1228<sup>th</sup> Ordinary General Meeting**

RSNSW 2014 Jak Kelly Award Presentation and Society's Christmas Party

Awarded to Ms Lhin Tran, a third-year PhD student at the Centre for Medical Radiation Physics (CMRP) at the University of Wollongong.

Presented by Mrs Irene Kelly, widow of Professor Kelly.



**Tuesday 9 December 2014**

**Dirac Lecture**

*The Beauty and Serendipity of Blue Sky Research*

Professor Serge Haroche, Head of the Collège de France, Paris

Professor Haroche (jointly with David J. Wineland) was awarded the 2012 Nobel Prize for Physics for ground-breaking experimental methods that enable measuring and manipulation of individual quantum systems, for their work on understanding the photon.

The Dirac Lecture was presented by the University of New South Wales, in conjunction with the Royal Society of NSW and the Australian Institute of Physics.

Venue: Tyree Room, John Niland Scientia Building, University of New South Wales







## Proceedings of the Royal Society of New South Wales

### The 2014 programme of events – Southern Highlands Branch

The usual venue for Southern Highlands branch meetings is the Performing Arts Centre, Chevalier College, Bowral.

Thursday 20 February 2014 at 6:30 pm.

*Forensic Entomology*

Dr James Wallman

Thursday 20 Mar 2014 at 6:30 pm.

*Building Sustainability*

Professor Paul Cooper

Thursday 17 April 2014 at 6:30 pm.

*Using lasers to create the coldest stuff in the universe*

Professor Ken Baldwin

Thursday 15 May 2014 at 6:30 pm.

*The relationship between baroque music and senile dementia*

Dr Chistian Heim

Thursday 19 June 2014 at 6:30 pm.

*The Good Life*

Hugh MacKay

Thursday 17 July 2014 at 6:30 pm.

*The Royal Society and Gulliver's Travels*

Emeritus Professor Clive Probyn

Thursday 14 Aug 2014 at 6:30 pm.

*Green materials and recycling end-of-life polymers in steelmaking*

Scientia Professor Veena Sahajwalla

Thursday 16 Oct 2014 at 6:30 pm.

*Higgs-Boson and CERN*

Professor Kevin Varvell

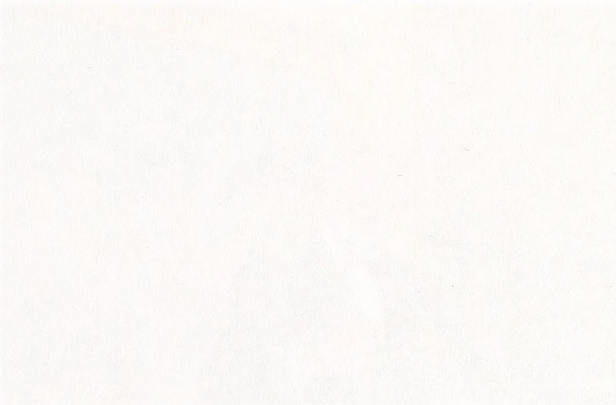


Thursday 6 Nov 2014 at 6:30 pm.  
*Bees in the food chain – economy and threats*  
Dr Madeleine Beekman

Thursday 20 Nov 2014 at 6:30 pm.  
*Genes and their relationship with Epigenes*  
Dr Catherine Suter



expressed its slogan and the quality of public health in an economic issue has been privileged. The controversy on anthropogenic global warming (AGW) has been conducted at an appalling level on both sides of politics. Debates on refugees and asylum have been conducted at a similar level. Vaccination, fluoridation and even evolution are both hotly debated, despite some clear. Despite Australia's large number of graduates (more than 400,000) per 38 universities and professional class generally have very limited political leverage and appear reluctant to offend government or business by telling them what they do not want to hear. Universities have become trading corporations, not just communities of scholars. Their collective lobbying power seems to be weak, well behind the gambling, coal or pork food lobbies and they become easy targets in times of expanded budget stringency. Fundamentally, the knowledge revolution has been accompanied by a persistent 'churning down' with little reinforcing the personal and immediate rather than the complex, long-term and remote. In a democratic society such as Australia, evidence is challenged by opinion and by vested or self-interest. Australia has no dedicated Minister for Science with direct



Portrait of a man, likely a member of the Royal Society of New South Wales.

The Society was proud to have Professor Gary Jones present the Fellows Lecture on Wednesday 7 May 2014. Professor Jones is the only person to have been elected a Fellow of all four of Australia's National Academies.

Science and research generally are given disproportionately low priority in contemporary public life in Australia, although medical research and innovation may be exceptions. Scientists, especially those involved with climate change or the environment, have come under unprecedented attack especially in the media, and the whole concept of scientific method is threatened, even ridiculed. In a complex world, people seem to be looking for simple answers that can be



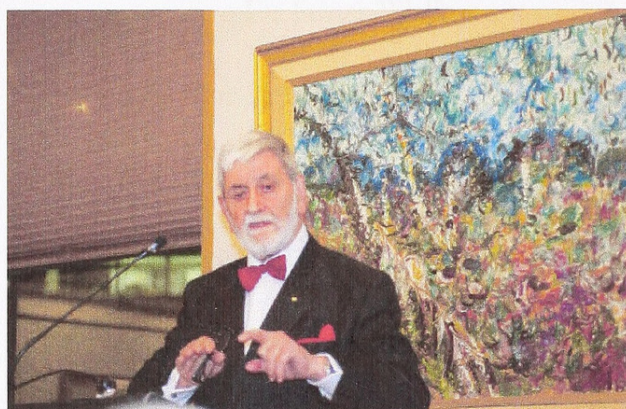


## The Distinguished Fellows Lecture 2014

Wednesday, 3 April 2013

*Evidence, opinion and interest – the attack on scientific method*

**Professor Barry Jones AC Dist FRSN FAA FTSE FASSA FAHA**



*Professor Barry Jones delivering the Distinguished Fellows Lecture.*

The Society was proud to have Professor Barry Jones present the Fellows Lecture on Wednesday, 7 May 2014. Professor Jones is the only person to have been elected a Fellow of all four of Australia's National Academies.

Science and research generally are given disturbingly low priority in contemporary public life in Australia, although medical research and astronomy may be exceptions. Scientists, especially those involved with climate change, or the environment, have come under unprecedented attack, especially in the media, and the whole concept of scientific method is discounted, even ridiculed. In a complex world, people seem to be looking for simple solutions that can be

expressed as slogans, and the quality of public debate on scientific issues has been trivialised, even infantilised. The controversy on anthropogenic global warming (AGW) has been conducted at an appalling level on both sides of politics. (Debates on refugees and taxation have been conducted at a similar level.) Vaccination, fluoridation and even evolution are hotly, but crudely, disputed in some areas. Despite Australia's large number of graduates (more than 4,000,000), our 38 universities and intellectual class generally have very limited political leverage and appear reluctant to offend government or business by telling them what they do not want to hear. Universities have become trading corporations, not just communities of scholars. Their collective lobbying power seems to be weak, well behind the gambling, coal or junk food lobbies and they become easy targets in times of exaggerated budget stringency. Paradoxically, the Knowledge Revolution has been accompanied by a persistent 'dumbing down', with ICT reinforcing the personal and immediate, rather than the complex, long-term and remote. In a democratic society such as Australia, evidence is challenged by opinion and by vested- or self-interest. Australia has no dedicated Minister for Science with direct



ownership / involvement in promoting scientific disciplines. If every vote in Australian elections is of equal value, does this mean that every opinion is entitled to equal respect? It is easy to categorise experts as elitists, and out of touch. There are serious problems in recruiting science teachers, and numbers of undergraduates in the enabling sciences and mathematics are falling relative to our neighbours. In an era of super-specialisation, many scientists are reluctant to engage in debate, even where their discipline has significant intersectoral connections. Science has some outstanding Australian

advocates, Gus Nossal, Peter Doherty, Ian Chubb, Fiona Stanley, Robert May, Brian Schmidt, Ian Frazer, Mike Archer among them, but they lack the coverage that is needed and that they deserve. There is a disturbing lack of community curiosity about our long term future, with an apparent assumption that consumption patterns will never change.

(The full text of Professor Jones' lecture was published in vol. 147, nos. 451 & 452, pp. 2-10.)







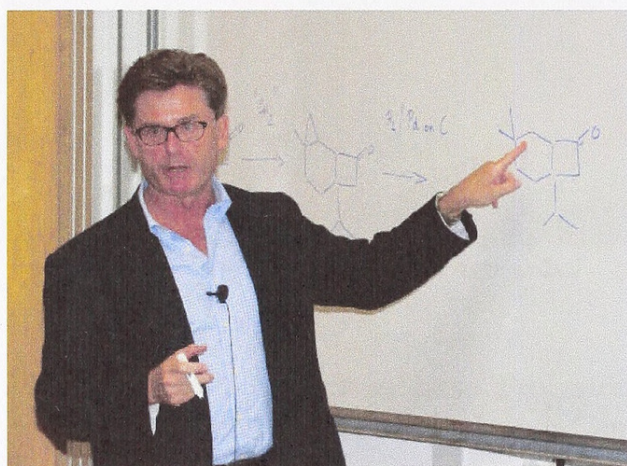
## The Liversidge Research Lecture 2014

Thursday, 20 November 2014

*Recent studies on the total synthesis of natural products and related systems*

**Professor Martin Banwell**

**Research School of Chemistry, Institute of Advanced Studies, Australian National University, Canberra**



*Professor Martin Banwell delivering the Liversidge Research Lecture 2014.*

The Liversidge Research Lecture 2014 was delivered by Professor Martin Banwell at the University of Sydney on Thursday, 20 November 2014. Professor Banwell is an organic chemist and is one of Australia's most accomplished researchers into the synthesis of complex organic compounds. In this year's Liversidge Research Lecture, he described work that has been done in his group over a number of years to synthesise materials that have wide-ranging applications, especially as pharmaceuticals.

The starting point for his work is a family organic chemicals called arenes. These are substances based on a structure of six carbon atoms arranged in a ring, with each carbon atom having a hydrogen atom attached – this substance is known as benzene. Some of the hydrogen atoms can be replaced by other substituents, for example, instead of one of the hydrogen atoms, methyl, bromine, chlorine, trifluorocarbon, hydroxyl, carboxyl etc. groups can be substituted. These can then be used as building blocks, using a variety of synthetic pathways, to make much more complex substances.

Until quite recently, many of these syntheses were done using a variety of chemical reactions that have been developed by organic chemists over the last 150 years. One of the problems that arises with this approach is that substances with the same chemical formula can have different shapes. For example, substances can have the same chemical formula but be mirror images of each another, in much the same way as the



right-hand is the mirror image of the left-hand – these are called enantiomers. Often, one enantiomer will have little physiological effect in comparison to the other. In the last 15 years or so, genetically-modified organisms have been developed that allows synthesis of these substances that favours production of the biologically-active enantiomer.

Professor Banwell described his work to develop synthetic pathways, starting with the simple substances described above and reacting these with genetically modified *e. coli* to produce an arene with two adjacent hydroxyl groups, in addition to the other reactive site. This results in an intermediate that allows a great variety of subsequent synthetic pathways, allowing synthesis of a very large number of biologically active substances. Two examples of these are vitamin C and the influenza drug Tamiflu.

Professor Banwell went on to describe a complex sequence of reactions that has enabled his group to synthesise a substance called Ribisin C, the substance that, at very low concentrations, appears to have a marked effect on the stimulating neurite growth in PC12 cells. (Neurites are projections that grow from neurons (nerve cells) as they develop and PC12 cells are particular type of rat neuron that is used in medical research.) It is hoped that this research work may lead to new treatments for neurological diseases and damage to the nervous system.

Professor Banwell's group is also working on novel pathways for making codeine, an opioid that is currently derived from opium poppy production. A synthetic pathway could, potentially, lead to a much less expensive production process for opiates.







## **The Dirac Lecture and Medal Presentation 2014**

**Tuesday, 9 December 2014**

*The Beauty and Serendipity of Blue Sky Research*

**Professor Serge Haroche**  
**Head, Collège de France, Paris**



Nobel Laureate Professor Serge Haroche illustrated the long road from fundamental discoveries to technological innovations by a few examples taken from his own field of research – atomic and optical physics. He reflected on the dangers that blue sky research faces in our uncertain global world and explained why it is essential to protect it and to make it thrive, in spite of the present economic difficulties.

Professor Haroche is a French physicist who was awarded the 2012 Nobel Prize for Physics jointly with David Wineland for “ground-breaking experimental methods that enable measuring and manipulation of individual quantum systems”, a study of the particle of light, the photon. Since 2001 he has been a Professor at the Collège de France and holds the Chair of Quantum Physics. He is a member of the Société Française de Physique, the European Physical Society and a fellow and member of the American Physical Society.

The Dirac Lecture is held annually by the University of NSW in conjunction with the Royal Society of NSW and the Australian Institute of Physics, NSW Branch.





2014. "The 2014 program of events of the RSNSW." *Journal and proceedings of the Royal Society of New South Wales* 147(2), 147–157.

<https://doi.org/10.5962/p.361721>.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/192278>

**DOI:** <https://doi.org/10.5962/p.361721>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/361721>

#### **Holding Institution**

Smithsonian Libraries and Archives

#### **Sponsored by**

Biodiversity Heritage Library

#### **Copyright & Reuse**

Copyright Status: In Copyright. Digitized with the permission of the rights holder

Rights Holder: Royal Society of New South Wales

License: <http://creativecommons.org/licenses/by-nc/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.