



Proceedings of the Royal Society of New South Wales

The 2017 programme of events – Sydney

Held at the Union, Universities and Schools Club, 25 Bent St, Sydney unless otherwise stated.

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| Wed 1 Feb | 1250 th Ordinary Meeting RSNSW Scholarship winners | Yik Lung (Jeremy) Chan, University of Technology Sydney Andrew Ritchie, University of Sydney Isobel Ronai, University of Sydney | Effects of maternal cigarette smoke exposure on brain health in offspring New ways of modelling the ancient past to understand evolution Anarchy in the honey bee colony: the genetic basis of worker sterility |
| Thu 23 Feb | The Four Societies Lecture | Rear Admiral, The Honourable Kevin Scarce AC CSC RAN (ret'd.) | South Australia: a nuclear State in a global solution |
| Held in conjunction with the Nuclear Engineering Panel of the Sydney Branch of Engineers Australia, the Australian Nuclear Association and the Australian Institute of Energy. Held at Hamilton and Parkes Rooms, Level 47, MLC Centre, King and Castlereagh St. | | | |
| Wed 1 Mar | 1241 st Ordinary Meeting | Richard Ferguson FRGS Executive Director, Craft Australia | Creative minds: Artistic and scientific endeavour on polar expeditions 1851 to 1951 |
| Wed 5 April | 1242 nd Ordinary Meeting and 150 th Annual General Meeting | Dr Greg Organ Senior Sensory Specialist, Lion Company | The science of beer |
| Wed 3 May | Annual Dinner: Distinguished Fellow's Lecture and presentation of the Society's 2016 awards | Guests of honour: The Society's Vice-Regal Patron, His Excellency General The Honourable David Hurley AC DSC (Ret'd), Governor of New South Wales and Em. Professor Peter Baume AC DistFRSN | Don't blame the unemployed |

JOURNAL & PROCEEDINGS OF THE ROYAL SOCIETY OF NEW SOUTH WALES
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| Thu 11 May | Liversidge Lecture | Scientia Professor Justin Gooding, UNSW | Sensing our world: From glucose sensors to counting single molecules and cells |
| Held in conjunction with Royal Australian Chemistry Institute. Held at Tyree Room and Balcony, John Niland Scientia Building, UNSW | | | |
| Wed 7 June | 1253 rd Ordinary Meeting | Professor Madeleine Beekman, University of Sydney | Are you smarter than a slime mould? |
| Wed 5 July | 1254 th Ordinary Meeting | Professor Andrea Morella | Understanding Quantum Theory |
| Wed 2 Aug | 1255 th Ordinary Meeting | Professor Ann Williamson UNSW | Self-Driving Cars: Will they help? |
| Tu 1 Aug | ANSTO, AIP, RACI, RSNSW | Round Table Discussion with Em Prof Heinrich Hora, Grahame Campbell, Dr Richard Garrett | The Future of Fusion |
| Held in conjunction with the Australian Institute of Physics, the Australian Nuclear Science and Technology Organisation, the Royal Australian Chemical Institute and RSNSW Held at the Discovery Centre, ANSTO, Lucas Heights | | | |
| <i>Sydney Science Festival lunchtime science talks</i> | | | |
| Fri 11 Aug | Sydney Science Festival | Professor John Murray, UNSW | Smoking and lung cancer: How are we doing? |
| Mo 14 Aug | Sydney Science Festival | Dr Kathleen Riley, Writer, classical scholar and theatre historian | Fred Astaire and the Science of Spontaneity |
| Tu 15 Aug | Sydney Science Festival | Professor Leslie Burnett, Garvan Institute of Medical Research | Personalised medicine – healthcare in the 21st century |
| Thu 17 Aug | Sydney Science Festival | Em Professor D Brynn Hibbert, UNSW, President RSNSW | Scientific and not-so-scientific fraud: crooks, cranks and charlatans |

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| Tu 29 Aug | Poggendorff lecture | Associate Professor Andrew Robson, University of New England | Applied remote sensing applications for Australian agricultural and horticultural industries |
| Held at Mitchell Theatre, Level 1, Sydney Mechanics' School of Arts, 280 Pitt St., Sydney | | | |
| Mo 4 Sep | RSNSW/SMSA Enlightenment Series | Susannah Fullerton, Author, lecturer and literary tour leader | Lecture 1: Samuel Pepys, His Library and the Enlightenment |
| RSNSW/SMSA Joint Lecture Series: Is the Enlightenment dead? Held at Mitchell Theatre, Level 1, Sydney Mechanics' School of Arts, 280 Pitt St., Sydney | | | |
| Wed 6 Sep | 1256 th Ordinary Meeting | Dr Helen Mitchell, Conservatorium of Music | Multisensory music: listening by ear and eye? |
| Wed 4 Oct | 1257 th Ordinary Meeting | Professor Pip Pattison AO, Deputy Vice Chancellor, University of Sydney | The science of social networks |
| Mo 6 Nov | 2016 Dirac Lecture | Professor Boris Altshuber Columbia University | Dark Matter in the Universe |
| Held at Ritchie Theatre, John Niland Scientia Building, UNSW | | | |
| Mo 6 Nov | RSNSW/SMSA Enlightenment Series | Professor Robert Clancy AM | The freedom to use one's own intelligence: the Enlightenment and the growth of the Australian nation |
| RSNSW/SMSA Joint Lecture Series: Is the Enlightenment dead? Held at Mitchell Theatre, Level 1, Sydney Mechanics' School of Arts, 280 Pitt St., Sydney | | | |
| Wed 1 Nov | 1258 th Ordinary Meeting | Pamela Griffith, Artist, designer, master printer and author | Women artists: barriers and frustrations |
| Tue 29 Nov | RSNSW and Four Academies Forum | Government House, Sydney; hosted by his Excellency General The Honourable David Hurley AC DSC (Ret'd) Governor of NSW and Patron of the Royal Society of NSW at Government House | The future of rationality in a post- truth world |
| Held in cooperation with the Australian Academy of Science, the Australian Academy of Technological Sciences and Engineering, the Australian Academy of the Humanities and the Academy of Social Sciences in Australia. | | | |
| Wed 6 Dec | 1259 th Ordinary Meeting | Royal Society of NSW 2017 Jak Kelly Award: Moritz Merklein, University of Sydney | How to store light: an optical memory based on sound waves |

The 2017 programme of events— Southern Highlands

Held at the Performing Arts Centre, Chevalier College, Bowral. Venue from October 2017:
 Mittagong RSL, 1st Floor, Joadja/Nattai Rooms.

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| Thu 16 Feb 2017 | Prof Adam Guastella Brain & Mind Research Institute | Autism and ASD (Autism Spectrum Disorder) |
| Thu 16 Mar | Dr Barbara Briggs Royal Botanic Gardens | Two hundred years of the Royal Botanic Garden Sydney, Australia's oldest continuing scientific institution. |
| Thu 20 Apr | Dr Michael Kennedy Consultant Physician and Clinical Pharmacologist, St Vincent's Hospital | Post mortem drug studies : What happens to drugs after death |
| Thu 18 May | Prof Gregg Suaning Professor of Biomedical Engineering, University of NSW | The Bionic Eye "... to do for vision what the Cochlear implant has done for hearing" |
| Thu 15 June | Dr Michael Birrell | Luxor temple : The Southern Harem of Amun |
| Thu 20 July | Dr Wes Stein, CSIRO | Smoke and Mirrors— Where to for Clean Energy? |
| Thu 17 Aug | Hugh Mackay Psychologist, Sociologist and Social Researcher | The changing place of religion in Australia |
| Thu 28 Sep | Professor Peter Schofield Executive Director and CEO, NeuRA (Neuroscience Research Australia) | Biomarker Changes in Dominantly Inherited Alzheimer's Disease |
| Thu 19 Oct | Professor Dean Rickles Professor of History and Philosophy of Modern Physics, University of Sydney | Quantum Gravity |
| Thu 16 Nov | Yik Lung (Jeremy) Chan, University of Technology Sydney | Effects of Maternal Cigarette Smoke Exposure |

Awards 2017

James Cook Medal

Scientia Professor Gordon Parker AO FRANZCP FASSA is the winner of the **James Cook Medal**. He is Professor of Medicine at the University of New South Wales.

Professor Parker's research has been focused on psychiatry, specialising in clinical research in mental health, in particular, depression and bipolar disorder. He was founding Director of the internationally recognised Black Dog Institute, dedicated to understanding, preventing, and treating mental illness. Thus, his contributions have had a major and lasting impact on human welfare in Australia, the Southern Hemisphere and beyond.

The James Cook Medal is awarded from time to time for outstanding contributions to both science and human welfare in and for the Southern Hemisphere.

Edgeworth David Medal

Edgeworth David Medal for 2017 will be awarded to **Dr. Angela Nickerson**. She is a Senior Lecturer in the School of Psychology University of New South Wales, and an emerging international leader in the field of refugee mental health.

Dr Nickerson's research has been highly influential on both the direction of the research field, as well as policy and practice both in Australia and overseas.

Her research has been at the forefront of uncovering the psychological mechanisms that underpin refugee mental health.

The Edgeworth David Medal is awarded each year for distinguished research by a young scientist under the age of 35 years for work done mainly in Australia or for contributing to the advancement of Australian science.

Clarke Medal for Botany

This year's winner of the **Clarke Medal** is **Professor David Keith**. He is Professor of Botany, University of New South Wales and Senior Principal Research Scientist, NSW Office of Environment & Heritage.

Professor Keith is widely regarded as a leading plant ecologist at a state, national, and international level. His standing is founded on diverse contributions to botany, ecology, and conservation biology, both within Australia and globally. These contributions include long-term ecological studies, extensive vegetation surveys and mapping, studies on the ecology of rare and threatened flora, conservation risk analysis for species and ecosystems, applied fire ecology, and most recently a seminal synthesis in a new book on Australian vegetation.

The Clarke Medal is awarded each year for distinguished research in the natural sciences conducted in the Australian Commonwealth and its territories. The fields of botany, geology, and zoology are considered in rotation. For 2017, the medal was awarded in Botany.

History and Philosophy of Science Medal

Professor Peter Godfrey-Smith will receive the **History and Philosophy of Science Medal** for 2017. He is Professor at the School of History and Philosophy of Science at the University of Sydney.

Professor Peter Godfrey-Smith has made seminal contributions to the philosophy of biology, especially evolutionary theory, and to the philosophy of mind, particularly in relation to animal cognition and the evolutionary origins of subjective experience and ‘consciousness’.

The Society’s History and Philosophy of Science Medal is awarded each year to recognise outstanding achievement in the History and Philosophy of Science, with preference being given to the study of ideas, institutions, and individuals of significance to the practice of the natural sciences in Australia.

Royal Society of New South Wales Scholarships

Three scholarships of \$500 plus and a complimentary year of membership of the Society are awarded each year in order to acknowledge outstanding achievements by young researchers in any field of science. Applicants must be enrolled as research students in a university in either NSW or the ACT. This year’s winners are:

Grace Causer, PhD Candidate at the University of Wollongong and the Australian Nuclear Science and Technology Organisation. Ms Causer investigates novel and artificial nanomaterials, e.g., spintronic and multiferroic materials, using neutron and X-ray scattering methods. Consequently, these studies could lead to future applications in hydrogen gas sensing, spintronic, memory storage, and logic devices.

Yu-wei Lin, PhD Candidate in the Faculty of Pharmacy, University of Sydney. Mr Lin’s area of research is concerned with developing valuable pharmacological information with regards to life-threatening respiratory tract infections caused by the deadly Gram-negative ‘superbugs’.

Cara Van Der Wal, PhD candidate at the University of Sydney and the Australian Museum. Her research focuses on a remarkable group of crustaceans known as mantis shrimps. Many species live in Australian waters, but the evolutionary history and diversity of mantis shrimps remain poorly understood. Subsequently, these studies will fill the biological knowledge gap on genetic resources from this group of crustaceans.

Pollock Memorial Lecture

The **Pollock Memorial Lectureship** for 2017 will be awarded to **Professor Andrea Morello** FAPS FRSN, University of New South Wales.

Professor Morello is an internationally recognised leader in quantum science and technology. He has invented and demonstrated all of the fundamental building blocks of a silicon quantum computer, laying the foundations for its practical manufacturing.

The Pollock Memorial Lectureship has been awarded from time to time for research in physics. It is jointly sponsored by the University of Sydney and the Society in memory of Professor J.A. Pollock, Professor of Physics at the University of Sydney (1899-1922) and a member of the Society for 35 years

Poggendorff Lecture

Associate Professor Brent Kaiser will be awarded the **Poggendorff Lectureship** for 2017. He is Professor at the School of Life and Environmental Sciences, University of Sydney.

Professor Kaiser is a molecular plant physiologist whose research into the sustainable use of nitrogen in cereal and legume grain crops has not only advanced the field, but achieved also tangible improvements in agricultural production and environmental stewardship.

The Poggendorff Lecture is awarded every two to three years for research in plant biology and more broadly agriculture.

RSNSW Medal

Dr Donald Hector AO FRSN will be awarded the **RSNSW Medal** for 2017. He is Vice-President of the Society and immediate past President.

Dr Hector's contributions to the RSNSW have been important, extensive and over a number of years. In particular, the recent restructuring of the Society's membership and organisation has allowed the Society to become a true leader of NSW intellectual life.

The Society's Bronze Medal is awarded from time to time to a member of the Society who has made meritorious contributions to the advancement of science, including administration and organisation of scientific endeavour and for services to the Society.

Jak Kelly Award

The winner of the **Jak Kelly Award** for 2017 is Moritz Merklein from the University of Sydney. His research investigates a memory for optical data that is based on sound waves and has the potential to revolutionise next-generation computer chips.

The Jak Kelly Award encourages excellence in postgraduate research in physics. The winner was selected from a short list of candidates who made presentations at a recent joint meeting at UNSW of the Australian Institute of Physics NSW Branch, the Royal Australian Chemical Institute, and the Royal Society of NSW.