

# The New Zealand Association of Scientists Awards for 2014

## Marsden Medal 2014

The **Marsden Medal** is awarded for a lifetime of outstanding service to the cause or profession of science, in the widest connotation of the phrase.

**In 2014 we are awarding the Marsden Medal to two equally deserving scientists.**

### **Professor Mick Clout, University of Auckland**

Mick Clout is Professor of Conservation Ecology at the University of Auckland. He is a vertebrate ecologist and has worked on a range of invasive mammals and threatened native birds, first with the Department of Scientific and Industrial Research and then the Department of Conservation, before joining the University of Auckland in 1993. He established the Invasive Species Specialist Group of the Species Survival Commission of the International Union for Conservation of Nature (SSC/IUCN) and led it for 15 years, and has also served as chair of the Kakapo Scientific & Technical Advisory Committee since 1995 and the Biosecurity Ministerial Advisory Committee since 2005. His primary research speciality is the ecology and behaviour of vertebrates, but he has broad interests in applications of ecological science to national and international problems in conservation and biodiversity management. He has been honoured with the Sir Peter Scott Award for Conservation Merit (2008), the Charles Fleming Award for Environmental Achievement (2007), and the NZ Ecological Society Award for Ecological Excellence (2007). In 2010 he was elected Fellow of the Royal Society of New Zealand. Mick has served his discipline with distinction and the cause of conservation in New Zealand with great zeal and effect.



### **Professor Keith Hunter, University of Otago**

Professor Keith Hunter is a recognised leader and innovator in environmental and chemical oceanography. His research is characterised by the application of fundamental chemistry to the investigation of oceanographic systems and the role of trace elements and, recently, CO<sub>2</sub> in ecological and biogeochemical processes. He has co-authored over 140 publications, including papers in *Nature* and *Science*, and his research has been supported by many Marsden and Foundation for Research, Science and Technology research grants. His close collaboration with scientists



at the National Institute of Water and Atmospheric Research has resulted in the establishment of a joint Research Centre in Chemical Oceanography. In recognition of his contribution to New Zealand and international science, he was made a Fellow of the Royal Society of New Zealand, elected as a member of the American Geophysical Union, invited to chair international working groups, and was awarded the Prime Minister's Science Prize in 2011 and the University of Otago Distinguished Research Medal. Keith has held significant administrative positions for the Royal Society of New Zealand and the University of Otago and is currently Pro-Vice Chancellor (Sciences) at Otago.

## Shorland Medal 2014

The **Shorland Medal** is awarded in recognition of major and continued contribution to basic or applied research that has added significantly to scientific understanding or resulted in significant benefits to society.

### **Professor Wei Gao, University of Auckland**

Dr Wei Gao is a Professor of Materials Science and Engineering at the University of Auckland. He received his DPhil from Oxford University in 1988, and worked at Massachusetts Institute of Technology for 5 years as a Research Fellow. At the University of Auckland, he leads a research group of 30 people, and has made significant contributions in a wide area including nanomaterials, thin films and coatings, light alloys, corrosion and oxidation, superconductors, photocatalysis, wastewater treatment and electron microscopy. His group discovered a simple method to produce 'black titania' (TiO<sub>2-x</sub>), which can collect energy by absorbing ultraviolet, visible and infrared radiations from sunlight, dramatically improving the efficiency of using solar energy. The nanostructure alloy/composite coatings his group developed possess superior wear and corrosion resistance, and are being used in machinery, tool and device industries in New Zealand and overseas. His selective oxidation map/theory has established the relationships of microstructure and protective oxidation, and has significant impact on oxidation-resistant coating research. He has 660 refereed research publications including 375 journal papers, 11 books and book chapters and 15 patents. He is a Fellow of the Royal Society of New Zealand and Institution of Professional Engineers in New Zealand; Vice President of the International Thin Films Society; sits on a number of editorial boards of international journals; and is Honorary/Advisory Professor for 8 universities overseas. He has also received a number of prestigious awards, including the RJ Scott Medal, James Cook Fellowship, RH Cooper Award, and Distinguished Materials Scientist of China.



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## Research Medal 2014

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The **Research Medal** is awarded for outstanding fundamental or applied research in the physical, natural or social sciences published by a scientist under the age of 40, during the year of the award or the preceding three calendar years.

**In 2014 we are pleased to award the medal jointly to two scientists.**

### **Professor Merryn Gott, University of Auckland**

Professor Merryn Gott has developed a programme of research that is at the leading edge of one of the greatest challenges facing health systems today, namely how to reduce suffering at the end of life within the context of rapidly ageing populations and constrained health budgets. Her research has resulted in over 120 publications in peer-reviewed journals as well as several books, including an international textbook for Oxford University Press which has been recognised as a ground-breaking work in its field. Not only is her work highly cited, but it has also influenced policy and led to real changes in health and social care services. Merryn directs the Te Arai Palliative Care Research Group based in the School of Nursing, University of Auckland, which has adopted a bicultural framework to focus particularly upon issues of social justice at the end of life and following bereavement. For example, she is currently leading study, funded by the Health Research Council, exploring ways of optimising care at the end of life for Māori and non-Māori over the age of 85 living in a number of communities across New Zealand. Merryn also plays a key role in supporting New Zealand's next generation of health scientists by mentoring early-career researchers and through postgraduate student supervision; she currently supervises seven PhD students.



### **Associate Professor Richard Tilley, Victoria University of Wellington**

Associate Professor Richard Tilley of Victoria University has pioneered and developed the synthesis and electron microscopy characterisation of nanoparticles in New Zealand. The applications of the nanoparticles made in Richard's group are varied and include development, in collaboration with the Malaghan Institute and Wellington Hospital, of magnetic nanoparticles for MRI contrast agents. The contrast agents are capable of detecting tumours as small as 2 mm and will lead to earlier detection and enhanced treatment of cancers. Additional applications are making light-emitting and -absorbing quantum



dots for solar cells. Richard has also unlocked new fundamental growth mechanisms to explain how nanocrystals can nucleate and grow into unique cubic, hourglass, and branched shapes with unique properties for the next generation of catalysts for greener and more efficient technologies. Richard is a Principal Investigator and runs the electron microscope facility of the MacDiarmid Institute. During the past 5 years he has published over 50 papers, including 15 in high impact factor journals, and in 2013 published by invitation in Nature Nanotechnology.

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## Science Communicator Award 2014

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The **Science Communicator** award is made to a practising scientist for excellence in communicating science to the general public in any area of science or technology.

### **Dr Michelle Dickinson, University of Auckland**

Having fun, getting excited, and playing around with science: this is Dr Michelle Dickinson's description of her day job as Senior Lecturer in the Department of Chemical and Materials Engineering, at the University of Auckland. She loves being able to share that passion with people from all walks of life, through her blog, public talks and TV appearances. Known as the girl who likes to break *really* tiny things, Michelle has a background in fracture mechanics and nanotechnology. Her passion for her discipline of materials science has been described as contagious and she is known for being able to spark that excitement in others who don't always understand the more technical details. Michelle understands that most of us don't have a PhD in science, or a mastery of the technical language that articles are written in, and believes that she can help fill the gap between the highly educated few and the public who crave for information they can understand. Michelle regularly appears on breakfast television to try to explain very complex topics in bite-sized and simple ways that anybody can understand, even before their first cup of morning coffee. As a young woman in STEM, Michelle hopes to help change the public stereotype of scientists and engineers, as well as being a role model for girls by showing that there are many fun, approachable women within this field.

