

The state of the School: a brief update on the School of Chemical Sciences at the University of Auckland

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Introduction

2014 was a singular year for the School of Chemical Sciences at the University of Auckland. We saw changes in leadership of both the School and of the Faculty of Science, changes in our academic and professional staff, and changes in the physical location of our research laboratories. We also saw extraordinary success in attracting external funding for research in the many areas of our diverse School. A notable event last year was my installation as the new Head of School in January 2014, and I take this opportunity to offer an update on the status of Chemical Sciences at Auckland.

Safety

The School of Chemical Sciences has an excellent reputation for performing its teaching and research missions in a safe environment. But safety in a laboratory environment is a dynamic process, and we continue to develop the culture of safety within the School. Monthly unannounced lab inspections, together with a process for documenting and addressing all safety incidents, are now an established part of the culture. An exciting development, led by the Deputy Head of School for Research, Christian Hartinger, is the introduction of a sophisticated software package for the tracking of hazardous and restricted materials "from cradle to grave". This software allows us to monitor what is ordered, whether the chemical is already in another lab on campus, the location of the chemical at all times, and finally its use or disposal. The School of Chemical Sciences will be the first academic unit at Auckland to use this software, and we will lead its installation across the entire university.

Teaching

We remain committed to the highest level of excellence in teaching, at both the undergraduate and postgraduate level. Numerous members of our staff have won university and national teaching awards. This year, our new undergraduate teaching laboratories won an international architectural award for excellence in scientific lab design, and Deputy Dean of Science, Jim Metson, was in London to receive the award on behalf of the university (for more details see the article by Katrina Graaf in this issue). The latest teaching innovation to originate from members of the School is the University of Auckland Science Scholars, an undergraduate interdisciplinary programme for the best and brightest undergraduates in the spirit of the "Honours Colleges" featured in many US universities. One of the leading founders of this program is Cather Simpson.

Research

The staff of the School have been very productive across our diverse areas of scholarship, from medical chemistry, through organic, inorganic, polymer and materials chemistry, to food science, wine science, and forensic science. This productivity is reflected in numerous external research grants and prizes. Among these are:

1. Ralph Cooney – Recipient of an MBIE grant, together with Margaret Brimble, Paul Kilmartin, Jianyong Jin, and Jadranka Travas-Sejdic.
2. Margaret Brimble – Won Westpac women of influence award in the science and innovation category, and awarded a Marsden grant.
3. Cather Simpson – Recipient of an MBIE grant.
4. Penny Brothers – Recipient of an MBIE grant, along with David Ware, David Williams and Margaret Brimble.
5. David Williams – Recipient of an MBIE grant.
6. Conrad Perera – Recipient of a Fonterra PGP grant.
7. Bruno Fedrizzi and David Barker – Recipients of a Bioresource Process Alliance grant.
8. Jonathan Sperry – Won a Thieme Chemistry Journal award in Feb 2014.
9. David Williams – named as the 2014 recipient of the U.R. Evans Award, which is the top international award of the UK Institute of Corrosion.

The School was also well represented in the recent round of CoRE awards. We were very pleased that the MacDiarmid Institute for Advanced Materials and Nanotechnology was funded again, since the School has 12 of our academic staff as Principal or Associate Investigators in the Institute. David Williams, Deputy Director of the MacDiarmid Institute, played a particularly important role in the successful proposal. We also note the success of members of our School in two other CoRE proposals: The Dodd Walls Centre, (Cather Simpson), and The Maurice Wilkins Centre (Margaret Brimble).

We made three new additions to the academic staff in 2014. Juliet Gerrard, Ivanhoe Leung, and Erin Leitao. Professor Juliet Gerrard trained at Oxford University, where she completed an Honours degree in Chemistry and a DPhil in Biological Chemistry. She joins our School as a joint appointment with the School of Biological Sciences and Callaghan Innovation. Juliet is FRSNZ, and Chair of the Marsden Fund Council. She is a distinguished protein chemist and has a particular interest in the self-assembly

of proteins into interesting functional nanostructures.

Dr Ivanhoe Leung arrived in October. His undergraduate, postgraduate, and postdoctoral studies were all undertaken at Oxford. He joins us as a Lecturer in Chemical Biology, and he will be critical for building our strength in chemical biology and macromolecular NMR.

Dr Erin Leitao joins us this year as a Lecturer in Inorganic Chemistry, strengthening our thriving Inorganic division. Erin earned her PhD from the University of Calgary, and was a Marie Curie Research Fellow at the University of Bristol.

Finally on the theme of research, a few comments on my own area of scholarship. My area of expertise lies in the x-ray spectroscopic study of the surface and bulk electronic structure of novel materials. Currently, six distinct classes of materials are under investigation: correlated solids (vanadates), organic semiconductors and metals (phthalocyanines), nitride semiconductors, transparent conducting oxides, rare-earth nitrides, and solid oxide fuel cell cathodes. The spectroscopies I use include numerous varieties of photoelectron spectroscopy (angle resolved photoemission, hard and soft x-ray photoemission, photoemission electron microscopy, and ambient pressure photoemission), x-ray emission spectroscopy, x-ray absorption spectroscopy, and resonant inelastic x-ray scattering. Almost all of my research is undertaken at synchrotron radiation facilities, and my group are heavy users of the Advanced Light Source at Lawrence Berkeley National Laboratory in California, the National Synchrotron Light Source at Brookhaven National Laboratory in New York, and the MAXLab facility in Lund, Sweden.

Centenary celebration

On Friday the 13th and Saturday the 14th of March 2015, the University of Auckland will celebrate the 100th anniversary of the establishment of the Department of Chemistry, now the School of Chemical Sciences. Our Centenary Celebration will feature:

- Lectures by Professor Robert H. Grubbs, 2005 Chemistry Nobel Laureate, from CalTech.
- A Lecture at the Auckland War Memorial Museum by Professor Russell Egdell from the Department of Chemistry, Oxford University, on Henry Moseley.

Moseley, a student of Rutherford, is famous for his work on x-ray spectroscopy and the development of the modern periodic table. He was killed at the age of 27 at Gallipoli.

- A presentation by Professor Joseph Nordgren from Uppsala University in Sweden. A member of the Royal Swedish Academy of Sciences, he will speak on the history of the Nobel Prizes in Chemistry and Physics, and the process for selection of the Laureates.
- A lecture by Professor Tim Jones, Pro-Vice Chancellor for Research at the University of Warwick on the future of carbon-based solar cells, and on his entrepreneurial chemistry.
- The Chemical Sciences Research Showcase, where the innovative and exciting work of our postgraduate students will be presented.
- A guided tour of Goldie, the University of Auckland vineyard on Waiheke Island where the wine science students from the School of Chemical Sciences learn their craft.
- Lectures by our top researchers.
- Tours of our new award-winning teaching laboratories.
- And finally, on Saturday night, a gala black-tie dinner in the University Marquee.

All members of the NZIC are warmly invited to this event, and people are able to attend one or both days. The registration web site can be found linked at the School of Chemical Sciences web site: <http://chemistry.auckland.ac.nz>. I look forward to seeing many of you at our Centenary Celebration.

Summary

The state of the School of Chemical Sciences is strong. With well over 30 academic staff, over 110 PhD students, and thousands of undergraduates taking chemistry courses, we are thriving. Our culture of safety is embedded and growing, our excellence in teaching is established, and our externally funded research is going from strength to strength. We look forward to continued success in 2015.