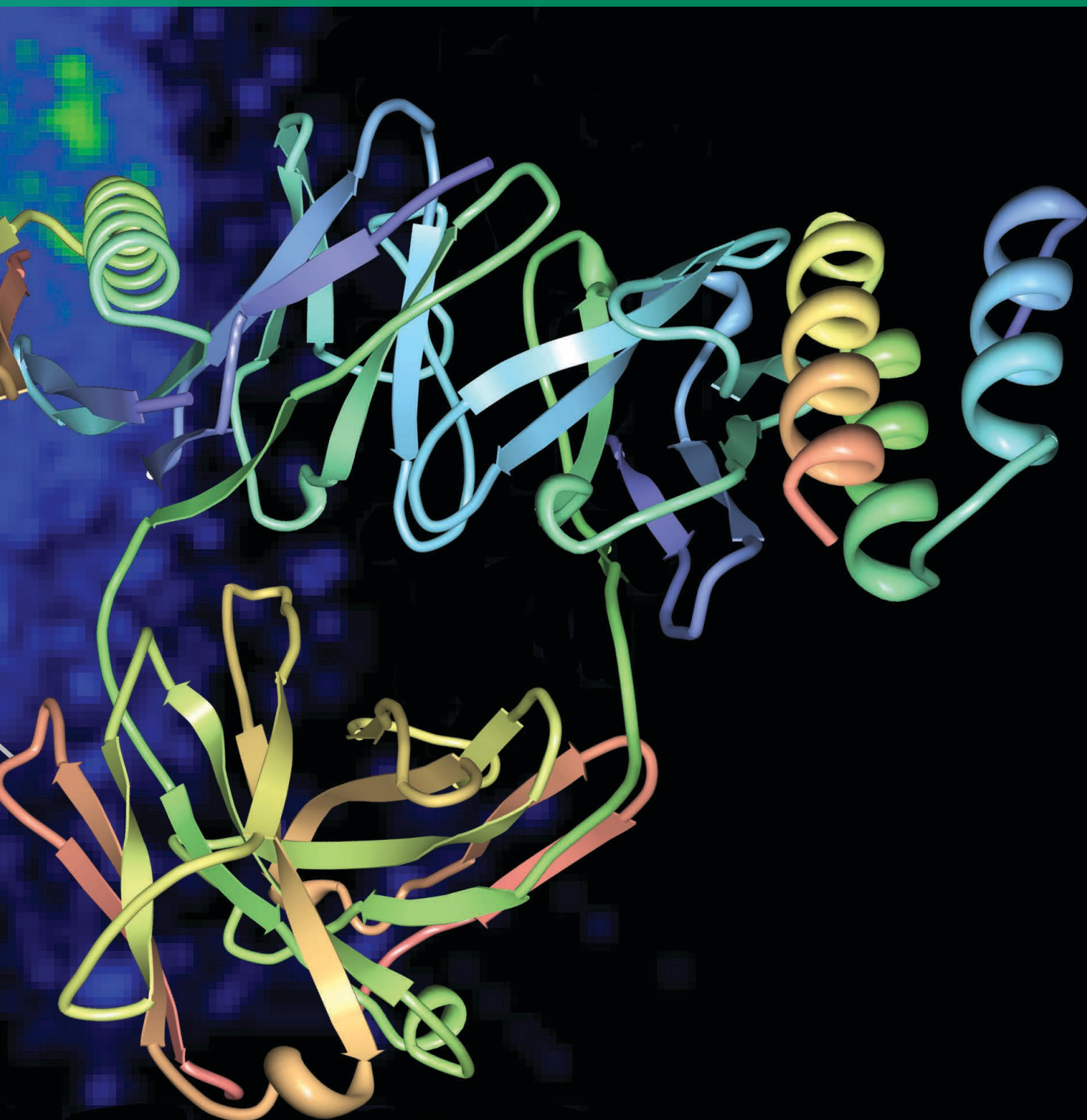




THE UNIVERSITY OF
MELBOURNE

SCHOOL OF CHEMISTRY ANNUAL REPORT 2014



SCHOOL OF CHEMISTRY

Annual Report 2014

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CONTACT THE SCHOOL

+61 3 8344 6567

Chemistry Building
The University of Melbourne
Victoria 3010 Australia

www.chemistry.unimelb.edu.au

Compiled by Jenny Long
longj@unimelb.edu.au

FRONT COVER IMAGE

From work by Lachlan McInnes, Gojko Buncic, Brett Paterson and Paul Donnelly. *Positron emission tomography (PET) can be used for the diagnosis and characterisation of breast cancer. The figure above shows a PET image of a positron-emitting copper cage amine complex tethered to an antibody (trastuzumab) selectively binding to a breast tumour xenograft in a mouse model.*



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INTRODUCTION FROM THE HEAD OF SCHOOL

The year 2014 was the International Year of Crystallography which the School of Chemistry celebrated by holding a series of public lectures and with an exhibition, 'Reflections: tales from within the crystal', which featured specimens, models and instrumentation from our historical collection.

The year also saw the completion of the major phase of the Chemistry building program, which was celebrated with a public lecture by 2009 Nobel Laureate and crystallographer, Ada Yonath, who opened the Chemistry East Wing Research Laboratories.

Research continues to be a strength of the School, with strong performance in Australian Research Council grants and over \$9.5M in project funding. The acquisition of University of Melbourne startup company, Fibrotech, by Shire, was a commercialization highlight. Shire will undertake further development of Fibrotech's lead product, which was first synthesized in the Williams laboratory in the School of Chemistry.

Our cohort of research students continues to grow, with over 200 students currently enrolled, many of whom are co-authors on journal publications. Our staff and students continue to be recognised for their accomplishments, including 2014 Selby Research Award which was granted to Dr Lars Goerigk and Chancellor's Prize awarded to PhD student, Brandon MacDonald.

Professor Rob Lamb from the School of Chemistry was appointed Executive Director of the Canadian Light Source. Professor Andrew Holmes, a pioneer in organic electronics, became the 18th president of the Australian Academy of Science. Professor Holmes is a Melbourne Laureate Professor Emeritus in the School of Chemistry. The School also appointed Gavin Reid, an alumnus of the School, as new Professor of Bioanalytical Chemistry in 2014.

Our teaching program has benefited from the new teaching laboratories and upgrade of student spaces. The School undergraduate numbers continue to increase with record numbers of undergraduate enrolments in 2014. The Chemistry Outreach Program continues to be a huge success led by Mick Moylan, whose success in outreach activities was recognized by a Dean's Award for Excellence in Engagement.

We said farewell to Dr Valda McRae who passed away early in the year. Her contributions to the School were recognized by a Melbourne University Chemical Society lecture held in her honour.

The School continues to show strong performance in teaching, research and engagement and I thank all members of the School for their support. 2015 promises to be a busy year as we prepare for increased student numbers and to celebrate the contributions of chemistry during the International Year of Light.

Professor Frances Separovic FAA

OUR PEOPLE

ACADEMIC

Head of School

Frances Separovic

Professors

Muthupandian Ashokkumar

Evan Bieske (APF)

Ken Ghiggino

Franz Grieser (APF)

Spas Dimitrov Kolev

Robert Lamb

Richard Alfred O'Hair

Gavin Reid

Mark Antony Rizzacasa

Carl Herbert Schiesser

Jonathan Michael White

Associate Professors and Readers

Brendan Francis Abrahams

Rachel Caruso (Future Fellow)

Paul Donnelly (Future Fellow)

Michelle Louise Gee

Craig Hutton

Trevor Alexander Smith

Uta Wille

Spencer Williams (Future Fellow)

Senior Lecturers

Stephen Peter Best

Colette Boskovic

Lecturers

Angus Anthony Gray-Weale

Alessandro Soncini

ARC Laureate Fellow and Professor

Paul Mulvaney

Future Fellows

Georgina Such

Wallace Wong

ARC Research Fellow

George Khairallah

ARC Australian Postdoctoral Fellows

Christopher Ritchie (DECRA)

Lars Goerigk (DECRA)

James Hutchison (DECRA)

Tutors

Penelope Commons

Sonia Horvat

Alice Lamb

Michael Moylan (Outreach Fellow)

Research Associates

Gojko Buncic

Dehong Chen

James Cochrane

Jade Cottam

Gareth Dickenson

Augustine Doronila

Viktoras Dryza (ASI ARENA Fellow)

Alex Duan

Maria Ines Gameiro Almeida

Christian Gunawan

Amber Hancock

David Hayne

Clare Henderson

Yuning Hong (McKenzie Fellow)

Joel Hooper

Timothy Hudson

David John Jones

Marco Lista (McKenzie Fellow)

Sean Murphy

Tich-Lam Nguyen

Asif Noor

Adabelle Ong

Sandra Osburn

Brett Paterson (Victorian Postdoctoral Fellow)

Tatiana Pinedo Rivera

Marc Antoine Sani

Colin Skene

Willem Van den Huevel (McKenzie Fellow)

Phillip Van der Peet

Huabin Wang

Xingzhan Wei

Keith White

Alex Wu

Zhiguang Xiao

Yanlin Zhang

Nicholas Zia

HONORARY APPOINTMENTS

Honorary Professional Fellow & Laureate Professor Emeritus

Andrew Bruce Holmes

Emeritus Professors

Donald William Cameron

Francis Patrick Larkins

Professorial Fellows

Robert Cattrall

Roger Francis Martin

Ezio Rizzardo

Richard Robson

Margaret Sheil

Peter Robert Taylor

John Desmond Wade

Robert Oliver Watts

John Webb

Anthony Gordon Wedd

Principal Fellows

Christopher Burns
William David McFadyen
Ian McKelvie
Peter McTigue
Richard Morrison
Geoffrey Scollary
Peter Tregloan

Senior Fellows

Robert Craig
Akhter Hossain
John Lambert
Xuehua Zhang

Fellows

Richard David Harcourt
Alessandro Martucci
Anastasios Polyzos
Suzanne Reichman
Denis Scanlon
Gerard Wilson

Visitors

Gregor Anderluh (Wilsmore)
Peter Baeuerle
Philip Blower (Wilsmore)
Daryl Bornhop
Adelia Maria Lima da Silva
Michael Grunze (Wilsmore)
Terry Lybrand
Patrick Masset
Christine McKenzie
Elena Mena-Osteritz
Cathal O'Connell

Ron Steer
Hermin Sulistyarti
Ken Suslick (Wilsmore)
Regine von Klitzing
Gerhard Wagner (Harvard Fellow)

PROFESSIONAL

West Precinct Manager (until 20 Jul)

Eugene Fredericks

Acting West Precinct Manager (from 21 July)

Maria Castle

West Precinct Facilities Manager

Paul Beardsley

Renee Beale
Vicki Burley
Gregory Ellis
Robert Gable
Sue Hickey
Ross Lineham
Jenny Long
Brendan Mangan
Bryan McGowan
Alf Meilak
Elizabeth Mills
Peter Mills
Des Odgers
Jennifer Scott
Alexandra Strich
Doug Taylor
Joe Tyler
Sioe See Volaric



Chemistry Staff & RhD students enjoying the end of year get together at Edinburgh Gardens, Fitzroy Melbourne. Photo Credit: Alex Strich

NEWS

From time to time, School of Chemistry staff and students make the news! Below are excerpts from news stories and articles from 2014 about the School of Chemistry, from print and electronic media.



VALE VALDA MCRAE

Sadly Dr Valda McRae passed away on Friday 3 January. Valda was a great stalwart of the School over many decades. Valda completed her PhD in Chemistry as a part-time student whilst working as a demonstrator and later senior demonstrator in the early 1960's. From 1966 to 1968 Valda went to the University of Leicester as a postdoctoral fellow. On returning to Australia with

her husband Jack in 1968, she worked in the Science Faculty Office, as Assistant to the Sub-Dean and then Sub-Dean; and then worked in Chemistry as principal tutor, lecturer and senior lecturer (1988). Her research interests, after returning to the School in 1974, were in analytical and radiochemistry. From 1995 to 2000, Valda was the Executive Manager of the School of Chemistry. Once retired, Valda spent much of her time working on the School archives and history, and in 2003 edited the Lady Masson Lectures. In 2008, Valda published *Chemistry @ Melbourne 1960–2000*, a history of four decades in the School, and in 2013, *From Chalk and Talk to Powerpoint*, an account of the first 1000 meetings of the Melbourne University Chemical Society. She is greatly missed by her friends and colleagues at the University of Melbourne.

EDITORIAL ROLE FOR MARK RIZZACASA

Prof. Mark Rizzacasa has been invited to join the Editorial Advisory Board of *ACS Medicinal Chemistry Letters*, which is a companion journal to *J. Med. Chem.*

ROB LAMB, CEO OF CANADIAN SYNCHROTRON

Prof. Rob Lamb from the School of Chemistry has been appointed Chief Executive Officer of the Canadian Light Source. The CLS represents one of the largest scientific investments made in Canada and is one of the most advanced synchrotron light sources in the world. Rob was previously the Chair of the Board of the Australian Synchrotron Research Programme and subsequently founding Director of the Australian Synchrotron, which is located in Clayton, Victoria.

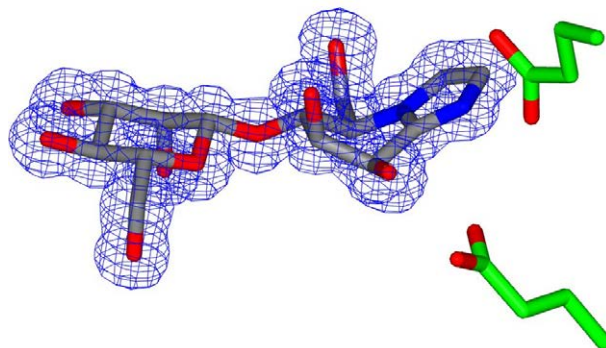


RICHARD O'HAIR ELECTED FELLOW OF ANZSMS

Prof. Richard O'Hair has been elected as an inaugural Fellow of the Australian New Zealand Society for Mass Spectrometry (ANZSMS). Fellow status recognises and honours the contribution of distinguished members of ANZSMS to the field of mass spectrometry and their enduring support of the Society.

SHIP-SHAPE INHIBITORS IN THE WILLIAMS GROUP

Mannosidases are glycoside hydrolases that catalyze the hydrolysis of a diverse range of polysaccharides and glycoconjugates, with applications in the pharmaceutical, detergent, food, biofuels and oil and gas industries. Using a combination of computational chemistry, inhibitor design and synthesis, and X-ray crystallography of inhibitor/enzyme complexes, Dr Rohan Williams and Assoc. Prof. Spencer Williams, along with collaborators at York, Newcastle and Barcelona, (*Angew. Chem. Int. Ed.*, 2014, 53:1087-1091) have shown that so-called mannoimidazole-type inhibitors are energetically poised to report faithfully on mannosidase transition-state conformation. Using the newly synthesized mannobiose-derived mannimidazole (ManMIm) direct evidence was provided for the conformational itinerary used by poorly characterized mannosidases and provided elusive, direct evidence in support of a boat-shaped transition state.



NEW RESEARCH LABORATORIES

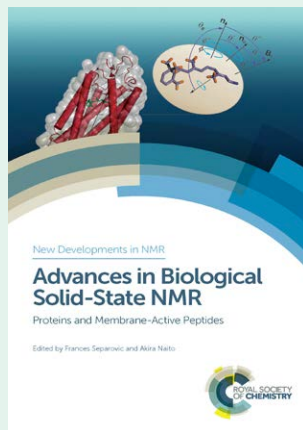
Stage 2 East, the final stage of the laboratory redevelopment in Chemistry, was completed in February 2014. The new research laboratories on Level 2 of the East Wing of the Chemistry Building include excellent analytical and instrumentation areas.

QS WORLD UNIVERSITY RANKINGS SUBJECT 2013/14

The discipline of Chemistry at the University of Melbourne was ranked top in Australia and 26 in the world according to the QS World University Rankings by Subject 2013/14.

RESEARCH PRIZE TO PHD STUDENT

Congratulations to Boskovic group PhD student, Michele Vonci, who won a student poster prize at the recent Southampton-Australia-New Zealand Workshop on Molecular Magnetism "SANZMAG-1" meeting at the University of Sydney.



RSC BOOK ON BIOLOGICAL SOLID-STATE NMR

The Royal Society of Chemistry were delighted to announce publication of the new book, *Advances in Biological Solid-State NMR: Proteins and Membrane-Active Peptides* by Prof. Frances Separovic (School of Chemistry) and Akira Naito.

EDUCATION WEEK GRANT

Mick Moylan received a grant from the Department of Education and Early Childhood Development to fund visits to schools during Education Week. The grant will allow students to investigate properties of chemical elements and get a better understanding of the way properties change across the Periodic Table.

GRIMWADE PRIZE TO CHRIS BURNS

The 2013 Grimwade Prize has been awarded to Dr Chris Burns (WEHI) for 'The discovery and development of the dual JAK1/JAK2 inhibitor CYT387 (Mometinib)'. The Grimwade Prize was established in 1905 by the Hon. Frederick Sheppard Grimwade, a drug wholesaler and part owner of Felton, Grimwade & Co. The company later became Felton, Grimwade and Bickfords Pty Ltd, the largest drug wholesaler in Victoria.



ANDREW HOLMES – MELBOURNE LAUREATE PROFESSOR EMERITUS

The School of Chemistry is proud to announce that distinguished scientist, Andrew Holmes, was appointed as Melbourne Laureate Professor Emeritus. Prof. Holmes was previously a University Laureate Professor of Chemistry and his new title was awarded in recognition of his lifetime achievement and eminence as a public intellectual.

LAUNCH OF CHEMISTRY VIRTUAL MUSEUM

The School of Chemistry has set up a Virtual Museum to display items from the Chemistry Cultural Collection, which can be seen at <http://museum.chemistry.unimelb.edu.au>. The Virtual Museum was launched at the Valda McRae Lecture held at the Melbourne University Chemical Society (MUCS) meeting on 2 April 2014 and initially funded by a Scholarly Information Grant awarded to Michelle Gee.

MUCS: VALDA MCRAE MEMORIAL LECTURE

The Melbourne University Chemical Society, MUCS, hosted a Lecture in honour of Dr Valda McRae on 2 April 2014 in the Cuming Theatre. Emeritus Prof. Don Cameron delivered the Lecture, entitled "What possible use can nuclear magnetic resonance spectroscopy have for chemistry?"

MS PROVIDE INSIGHTS INTO INSECTICIDE RESISTANCE

By using twin ion mass spectrometry, researchers in the School of Chemistry led by Prof. Richard O'Hair in collaboration with the Batterham Lab in Bio21 have explained how fruit flies express a single gene at high levels to rid themselves of a common insecticide. The research was published in *Analytical Chemistry* 2014, 86: 3525-3532 and also highlighted in *Chem & Eng News*.

THE CHEMISTRY OF CURIOSITY

Article in the *Voice* explores the winding career path of Prof. Frances Separovic, Head of Chemistry at the University of Melbourne.

ACQUISITION OF UOM STARTUP FIBROTEC BY SHIRE

Fibrotec Therapeutics, a start-up company co-founded by Assoc. Prof. Spencer Williams (School of Chemistry, Bio21 Institute) and colleagues from the Department of Medicine, University of Melbourne, has been acquired by Irish Pharmaceutical company Shire Plc. Fibrotec has developed a new class of antifibrotic agents with potential to treat the fibrosis prevalent in chronic kidney disease, chronic heart failure, pulmonary fibrosis and arthritis. Shire will undertake further development of Fibrotec's lead product FT011, first synthesized in the Williams laboratory. Shire has agreed to purchase Fibrotec for an upfront payment of \$US75M, and additional payments contingent upon meeting development and regulatory milestones.

LADY MASSON MEMORIAL LECTURE MAY 2014

The 30th Lady Masson Memorial Lecture, given by Dr Daniela Stock, Victor Chang Cardiac Research Institute, was held in the Masson Theatre on 14 May 2014. The lecture, entitled 'Visualising biological power converters at atomic resolution,' was visually exciting and stimulating and the theme fitted well with the International Year of Crystallography.



INTERNATIONAL YEAR OF CRYSTALLOGRAPHY PUBLIC LECTURE

Prof. Jenny Martin from the University of Queensland presented a lecture entitled, "Australia's Bragging rights", to celebrate 2014 the UNESCO International Year of Crystallography.



Rinorea niccolifera Fernando, shown as nickel hyperaccumulator by a field test using filter paper impregnated with 1% dimethylglyoxime dissolved in 95% ethanol. Photo credit: Edwino S. Fernando

NEW SPECIES OF METAL-EATING PLANT DISCOVERED

Researchers from the University of the Philippines, Los Baños, and the School of Chemistry have discovered a new plant species with an unusual lifestyle - it eats nickel for a living - accumulating up to 18,000 ppm of the metal in its leaves without itself being poisoned, says Prof. Edwino Fernando, lead author of the report. Such an amount is a hundred to a thousand times higher than in most other plants. "Hyperaccumulator plants have great potentials for the development of green technologies, for example, *phytoremediation* and *phytomining*", explains Dr Augustine Doronila of the School of Chemistry, University of Melbourne, who is also co-author of the report.

ACS PETROLEUM RESEARCH FUND GRANT TO MARK RIZZACASA

Congratulations to Prof. Mark Rizzacasa who was successful in obtaining an American Chemical Society (ACS) Petroleum Research Fund grant entitled "Catalytic Asymmetric Hydration of Alkenes with Chiral cis-beta Metallosalen Complexes".

AINSE POSTGRADUATE RESEARCH AWARD TO MICHELE VONCI

Congratulations to Michelle Vonci, PhD student from the Boskovic lab, who has been successful in receiving an AINSE Postgraduate Research Award.

GO8-GERMANY JOINT RESEARCH GRANT TO WU & LAMB

Dr Alex Wu and Prof. Rob Lamb have been successful in the 2015-16 Group of Eight Australia – Germany Joint Research Co-operation Scheme and awarded a grant to establish a new collaboration with Prof. Rosenhahn at the Ruhr-Universität Bochum. The title of the project is 'Novel ultra-rough antifouling surfaces through air engineering'. In addition they have also just been awarded considerable time on Europe's largest light source - ESRF in the south of France.

CHEMISTRY PIONEER TAKES OVER ACADEMY

A pioneer in organic electronics, Prof. Andrew Holmes, became the Australian Academy of Science's new President. Prof. Holmes formally took over from Prof. Suzanne Cory at the annual general meeting in Canberra on 28 May to become the 18th president of the Academy. He is currently a Melbourne Laureate Professor Emeritus at the School of Chemistry, Bio21 Institute, in the University of Melbourne and a CSIRO Fellow. Prof. Holmes has been recognised for his ground breaking work on light-emitting polymers. These polymers play an important role in the field of flexible electronics and have applications in flat-screen televisions and solar cells. He has also been the recipient of a long list of awards including the Royal Society's Royal Medal and the Descartes Prize. Prof. Holmes was elected to the Academy in 2006 and has served as Foreign Secretary since 2010. He is also a Fellow of the Royal Society of London and a Fellow of the Australian Academy of Technological Sciences & Engineering and a member of the School since 2004.



Left to right: Prof. Andrew Holmes and Prof. Suzanne Cory
Photo credit: Australian Academy of Science and photographer Mark Graham

IRRTF GRANT AWARDS TO CHEMISTRY STAFF

Congratulations to Prof. Carl Schiesser and Assoc. Prof. Michelle Gee who were successful in obtaining International Research & Research Training Fund (IRRTF) grants from the University. Carl's award is to build a "Selenium (Redox) Therapeutics" network involving Brazil, Italy, Denmark and Melbourne; and Michelle's is for an "International Research Network for Development of Antibiotic Peptides" with institutions in Australia, India and Germany.

DONNELLY LAB RESEARCH FEATURED IN ANGEWANDTE CHEMIE

Research by Dr Brett Paterson and Dr Paul Donnelly has been published in *Angewandte Chemie*. The team, in collaboration with Christoph Hagemeyer and Karen Alt from Baker IDI Institute, used enzyme-mediated bioconjugation for the site-specific incorporation of a radioactive metal complex into an antibody that is selective for activated platelets. The new immunoconjugates were radiolabeled with the positron-emitting isotope Cu-64 and were used for diagnostic imaging of carotid artery thrombosis using positron emission tomography.

CRYSTALLOGRAPHY EXHIBITION – REFLECTIONS: TALES FROM WITHIN THE CRYSTAL



In celebration of the International Year of Crystallography 2014, the School of Chemistry held an exhibition of historical items from the Chemistry Cultural Collection related to the study of crystallography. The exhibition, called *Reflections: tales from within the crystal*, brought together crystal specimens, models and instruments used in the School throughout history to solve the mysteries that lie within the crystal.

Johann Kepler, who detailed the beautiful symmetry of ice crystals, piqued scientific interest in crystals over 400 years ago. By the 20th century, scientists discovered that X-rays could be used to determine the arrangement of atoms within the crystal, creating the field of crystallography. One hundred years on, advancements in instrumentation allow modern crystallographers to solve the structures of large complex molecules such as DNA, RNA and proteins.

The exhibition opened on Friday 25 July with a special preview viewing for 20 alumni and staff within the School, and was a popular addition to the University's Cultural Treasures Weekend (26 - 27 July) with the exhibition viewed by over 200 people.



For more information about the Chemistry Cultural Collection visit: <http://www.museum.chemistry.unimelb.edu.au>

DEAN'S AWARDS FOR EXCELLENCE TO CHEMISTRY STAFF



Dean's Award for Excellence in Research to Colette Boskovic

Dr Colette Boskovic has been selected as the recipient of the Dean's Award for Excellence in Research (Teaching & Research) 2014. The award celebrates the outstanding achievements of a Faculty of Science staff member who is involved in both research and teaching.



Dean's Award for Excellence in EH&S to Bryan McGowan

Bryan McGowan has been selected as the co-recipient of the Dean's Award for Excellence in Environment, Health & Safety 2014. The award recognises the outstanding contribution of a Faculty of Science staff member to the management of environment, health and safety issues in the Faculty.



Dean's Award for Excellence in Engagement to Mick Moylan

Mick Moylan has been selected as a recipient of a 2014 Dean's Award for Excellence in Engagement (Outreach & Science Communication). The award celebrates ongoing, outstanding performance in engagement activities within the Faculty of Science and in the wider community.

HIGH PERFORMANCE COMPUTER TIME ACCESS GRANT SUCCESS

Dr Lars Goerigk was successful in gaining access to high-performance computer clusters with two recent grant applications for 2015: National Computational Merit Allocation Scheme for 520,000 CPU-hours at the National Computational Infrastructure in Canberra to undertake research on the quantum-chemical treatment of biomolecules and the development of new quantum-chemical methods for the treatment of electronic excited states; and Victorian Life Science Computation Initiative for 82,000 CPU-hours to undertake quantum-chemical research on biomolecules.



GAVIN REID – NEW PROFESSOR OF BIOANALYTICAL CHEMISTRY

Prof. Gavin Reid joined the School of Chemistry and is located at the Bio21 Institute. Gavin joined us from Michigan State University (MSU) and has a joint appointment with Department of Biochemistry & Molecular Biology. Over the past 25 years, Gavin has held a variety of research positions and academic appointments in Australia and the USA. He then obtained a PhD in Chemistry in 2000 from the University of Melbourne, under the joint supervision of Prof. R. O'Hair and Prof. R. Simpson. After post-doctoral research at Purdue University, he worked at the Ludwig Institute for Cancer Research. He then moved to MSU in 2004 as an Assistant Professor, where he was promoted to Associate Professor with tenure in 2009. Research in the Reid laboratory at MSU was broadly focused on: (i) the development of novel chemical, bio-analytical and mass spectrometry based methods and instrumentation for proteome and lipidome analysis; and (ii) the application of these strategies to identify biomarkers for the onset and progression of disease.

HEALY AWARDS TO PHD STUDENTS

Tom Healy Awards were presented to PhD students, Nicholas Kirkwood, Brendan Dyett and Anna Mularski, to enable them to travel to international conferences.

WILLE LAB RESEARCH HIGHLIGHTED IN CHEMISTRY WORLD

The magazine of the Royal Society of Chemistry, *Chemistry World*, has highlighted research from Assoc. Prof. Uta Wille's lab. The article *Nitrogen dioxide and ozone: a sinister synergy*, discussed research from the group's paper entitled "Oxidative damage of aromatic dipeptides by the environmental oxidants NO_2^\bullet and O_3 ". The research aims to understand environmental radicals and how they damage us by investigating the effects of exposing a series of dipeptides to NO_2^\bullet and O_3 . They found that a synergistic effect exists between NO_2^\bullet and O_3 , where their reaction to form nitrate leads to a host of other possible reaction products including toxic N_2O_5 and nitric acid. 'One outcome of this study that I find particularly interesting,' remarks Wille, 'is that nitrogen dioxide can cleave and rearrange peptide bonds. This has never been observed before and shows that peptides are much more vulnerable to these pollutants than previously believed.'

OPENING OF CHEMISTRY EAST WING RESEARCH LABORATORIES

The new research laboratories in the East Wing of the Chemistry Building were officially opened on 13 Aug 2014 in the presence of Nobel Laureate, Prof. Ada Yonath, who was awarded the prize for Chemistry in 2009. Prof. Yonath was assisted by the Provost, Prof. Margaret Sheil, the DVCR, Prof. Jim McCluskey, and the Dean of Science, Prof. Karen Day.

The opening signifies the completion of the research laboratory redevelopment from basement to Level 5 in the East building. Together with modern chemistry research laboratories in Bio21 and teaching laboratories in the West Wing (officially opened in 2011), the School now has upgraded almost all of its research and learning spaces.



Photo credit: Roberto Fusetto



CHANCELLOR'S PRIZE TO CHEMISTRY PHD STUDENT

The School of Chemistry congratulates Brandon MacDonald who has been awarded a Chancellor's Prize for Excellence in the PhD thesis for 2013. Brandon completed his PhD, entitled "Solution Processed CdTe Nanocrystal Solar Cells", under the supervision of Prof. Paul Mulvaney in the Nanoscience laboratory and Dr Jacek Jasieniak at the CSIRO, a former winner (2007). Brandon published 6 papers in high quality journals on the fabrication of a new form of photovoltaic device, which exhibited up to 10.4% energy conversion efficiency. The concepts were patented by CSIRO and the University of Melbourne. After completion of his PhD, Brandon joined QD Vision, a Boston start-up company developing quantum dot LED displays.

CHEMCOMM INTRODUCES RACHEL CARUSO AS ASSOCIATE EDITOR

Assoc. Prof. Rachel Caruso, from the School of Chemistry, is a new Associate Editor of the RSC journal, *Chemical Communications*. Rachel is a materials chemist with expertise in the fabrication of advanced porous functional materials. She currently leads the Advanced Porous Materials group with postdoctoral fellows and PhD students at both the University of Melbourne and CSIRO.

CNRS GRANT TO SANI & SEPAROVIC

Congratulations to Dr Marco Sani and Prof. Frances Separovic who were awarded a French National Centre for Scientific Research (CNRS) Researcher Visit grant for "The use of NMR to understand the association at cell membranes of proteins involved in Alzheimer's disease".

MARINE CORROSION AND FOULING CONFERENCE POSTER PRIZE

Congratulations to Jaimys Arnott from the Lamb group who won the top award for a poster presentation at the 50th Anniversary "International Congress on Marine Corrosion and Fouling" held in Singapore. This continues a winning streak for the group having picked up the same prize a couple of years earlier at the previous convention held in Seattle.



Jaimys Arnott (centre) is presented the ICMCF poster award

2014 SELBY RESEARCH AWARD TO LARS GOERIGK

The School of Chemistry congratulates ARC DECRA Fellow, Dr Lars Goerigk, who is recipient of the 2014 Selby Research Award for his research program entitled, "Quantum-chemical optimization of DNA structures and related compounds".

DYASON AWARD TO SPAS KOLEV

Prof. Spas Kolev has been successful with his application for a Dyason Fellowship for a project entitled, "Novel methods for coating metal substrates with gold nanoparticles using polymer inclusion membranes", which will involve a visit to the School of Chemistry by Prof. Tony Spassov, Dean of the Faculty of Chemistry and Pharmacy, University of Sofia, Bulgaria.



NEW BOOK EDITED BY PROF. ANTHONY WEDD

Congratulations to Tony Wedd, who together with Wolfgang Maret from University College, London has edited a new book which is part of the RSC Metallobiology Series, "Binding, Transport and Storage of Metal Ions in Biological Cells". This book is the first to comprehensively survey the molecular nature of the

overall natural balance of metal ions in nutrition, toxicology and pharmacology and is an introduction to researchers in academia and industry.

IAN POTTER FOUNDATION AWARD TO LARS GOERIGK

Congratulations to Dr Lars Goerigk who was recently awarded an Ian Potter Travel Grant to support his attendance at the triennial congress of the World Association of Theoretical & Computational Chemists "WATOC 2014" in Santiago de Chile, Chile, 5-10 October 2014. WATOC is the biggest and most important meeting in this field and Lars will have the opportunity to present his results and get to know local researchers at the conference.

CHEMISTRY NOBEL LAUREATE ON UP CLOSE

Ribosomes: Unlocking the secrets to cellular protein factories. Nobel Laureate Prof. Ada Yonath discusses her work on understanding ribosomes, the protein factories that are found in every cell of every living organism. Presented by Dr Dyani Lewis.

CONTROLLED QUENCH OF NMR

After almost 20 years, the solid-state 300 MHz NMR was decommissioned to make way for upgraded equipment. A spectacular sight with plumes of vapour was seen from the Bio21 Institute's 'NMR Cave' viewing platform on the morning of 10 September 2014, when the superconducting magnet, part of a 300 MHz NMR spectrometer system, was officially decommissioned.

ORGANIC POLYMER CHEMIST – INTERVIEW WITH ANDREW HOLMES

Recently Lab + Life Scientist interviewed Prof. Andrew Holmes (November 2014) Vol 25 (5) 6-10. Prof. Andrew Holmes reflects on the role serendipitous discovery has played in his successful research career as an organic chemist and how he is now stepping into the role as President of the Australian Academy of Science.

PUBLIC LECTURE BY NOBEL LAUREATE

In celebration of the International Year of Crystallography, the School of Chemistry hosted a public lecture by Prof. Ada Yonath who was awarded the 2009 Nobel Prize in Chemistry for her pioneering work on the structure of the ribosome. Prof. Yonath was here on a Miegunyah Distinguished Visiting Fellowship and spoke on 'Chemical bases of life processes revealed by X-ray crystallography' to an enthusiastic audience of almost 500 in the Copeland Theatre.



PublicLecture

"Miegunyah Distinguished Visiting Fellow Lecture"

Professor Ada Yonath
Nobel Laureate in Chemistry

Chemical bases of life processes revealed
by X-ray crystallography

Professor Yonath was awarded the Nobel Prize in Chemistry for pioneering work in which she determined the structure of the ribosome. The ribosome is central to all life. It is a complex molecular machine that is the main site for the biosynthesis of the proteins that sustain living organisms, from humans to bacteria. In revealing its structure, Professor Yonath provided a clearer understanding of its function and how current antibiotics work. This understanding should lead to the development of new drugs for targeting infection in the new era of antibiotic resistant bacteria. To celebrate the centenary of the discovery of X-ray crystallography by von Laue and the Braggs, and to highlight the importance of crystallography in almost every branch of the natural sciences, Professor Yonath will describe how X-ray crystallography can be used to reveal the chemical basis of life processes.

5.30 pm
Wednesday 13 August 2014

Copland Theatre
Basement
Business & Economics Building
198 Berkeley Street
University of Melbourne

Register:
<http://yonath.eventbrite.com.au>
Enquiries: Jenny Long
T: 8344 7137
E: longj@unimelb.edu.au

PUBLIC
LECTURE



Photo credit: Roberto Fusetto

WELCOME TO 2014 MCKENZIE FELLOW YUNING HONG

The 2014 McKenzie Fellows were officially welcomed with a lunch at University House attended by senior University staff, including Prof. John McKenzie, after whom the scholarships are named. This year, Dr Yuning Hong joined the School of Chemistry from Hong Kong University of Science & Technology, with a project titled 'Fluorescence approaches to probing the conformational transition of intrinsically disordered proteins and investigation of their pathogenic mechanism'.



MNI INTERDISCIPLINARY SEED FUNDING TO YUNING HONG

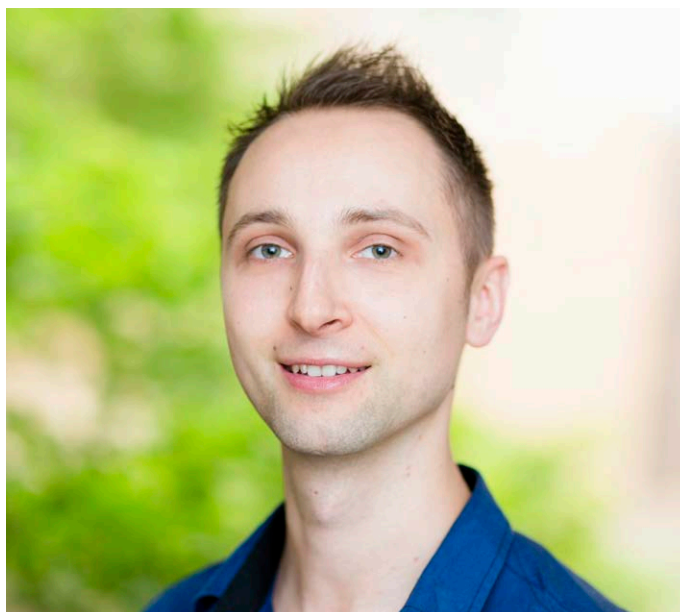
Dr Yuning Hong was successful in her grant application, 'Developing biomarkers of proteostasis decline for translational medicine in neurodegenerative diseases' funded by Melbourne Neuroscience Institute. Well done Yuning!

ARC GRANT SUCCESS

Congratulations to the following members of the School on their success in the recent ARC grant schemes: Prof. Evan Bieske: Cold ions and fire; Dr Colette Boskovic: Smart molecular materials for sensors, displays and nanoscale devices; Assoc. Prof. Craig Hutton: New roles for thioamides in peptide synthesis; Prof. Richard O'Hair: Coinage metal nanoclusters: synthesis, structure and reactivity; Dr Alessandro Soncini: Spin detection and control in molecular nanomagnets at surfaces; Dr Lei Zhang (DECRA): Water oxidation catalysts for artificial photosynthesis; Assoc. Prof. Brendan Abrahams (DP with D'Alessandro, USyd) and Prof. Paul Mulvaney (LIEF with RMIT).

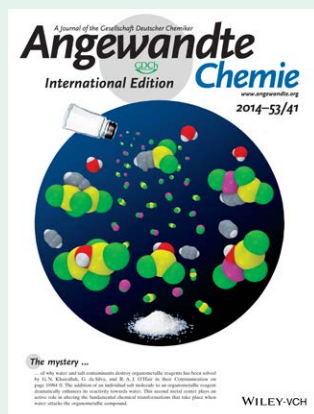
GO8-GERMANY JOINT RESEARCH GRANT TO LARS GOERIGK

Dr Lars Goerigk has been successful in the 2015-2016 Group of Eight Australia-Germany Joint Research Co-operation Scheme and awarded a grant to establish a new collaboration with Dr Tobias Schwabe at the University of Hamburg. The title of the project is "New efficient double-hybrid density functionals for the treatment of electronic excited states".



FEUTRILL TRAVEL AWARDS TO CHEMISTRY RESEARCH STUDENTS

Congratulations to the following research students who are recipients of a 2014 Feutrill Award, which helps support travel to an international conference in the area of Organic Chemistry: Aaron Brown for 20th International Conference on Organic Synthesis (ICOS-20) in Budapest in June-July 2014; Wenyi Li for 33rd European Peptide Symposium, Aug-Sep 2014, in Sofia, Bulgaria; and Sayali Shah & Gaetano Speciale for International Carbohydrate Symposium in Bangalore in January 2014.



ANGEWANDTE COVER FOR MASS SPEC TEAM

The mystery of why water and salt contaminants destroy organometallic reagents has been solved thanks to new research conducted at the School of Chemistry. Organometallic compounds, such as Grignard reagents, are powerful tools used to help create new organic molecules both in the laboratory and in commercial chemical plants, although care is required to avoid contaminants in the reaction. The research team of Prof. Richard O'Hair, Dr George Khairallah and Dr Gabriel da Silva has used a powerful combination of electrospray ionisation coupled with multistage mass spectrometry and theoretical simulations to study how magnesium and lithium acetylides react with water under idealized near-vacuum conditions, and tracked the effect of adding individual salt molecules on the reaction rate. This approach allowed them to see that the addition of an individual salt molecule to an organometallic reagent dramatically enhances its reactivity towards water. Theory showed how the salt molecule provides a second metal centre, which plays an active role to alter the fundamental chemical transformations taking place when water attacks these organometallic compounds (*Angewandte Chemie International Edition*, 2014, 53:0979).

SOCIETIES

CHEMISTRY POSTGRADUATE SOCIETY 2014



President: Emma Read

Treasurer: Alex McDonald

Secretary: Michael Leeming

Communications Officer: Rebecca Szabadai

Staff Rep: Liz Mills

General Committee: Jaimys Arnott, Tessa Evans, Ashleigh Farnsworth, Luke Gamon, Merinda Healey, Chris Kingsbury, Nicholas Kirkwood, Calvin Lee, Marija Petricevic, Kyra Swarz

PRESIDENT'S REPORT

The Chemistry Postgraduate Society (CPS) organised a number of social events during 2014 for the postgraduates and staff of the School of Chemistry. This enabled networking and team building outside of the laboratory.

2014 was an exciting year as we held several "Friday Frothies" drinks, an ultimate Frisbee championship, trivia night, Cup Day BBQ and two new events that included a pizza night and a ten pin bowling evening. Friday Frothies were well attended and enjoyed by all. The pizza night was a huge success with positive feedback by all who attended. This event should definitely be repeated in 2015.

The ultimate Frisbee championship was an exciting event and well attended. It was well advertised and had plenty of players from both Bio21 and the Masson building. The CPS celebrated afterwards with a few post game drinks at Tsubu on main campus. The Ten Pin Bowling evening was a small event with about 20 students participating but thoroughly enjoyed by all.

The Cup Day BBQ drew a very large crowd with free food and the Cup Day Sweep were appealing. The trivia night was considered the best we have had. Thanks to Alex McDonald for finding the perfect venue, Bridie O'Rielly's, in Brunswick. We had over 100 attendees and the Trivia Host was entertaining and humorous. We recommend the same venue and host for the coming year and possibly adding a movie night to the events list for 2015.

The CPS also assisted the School of Chemistry with an Easter Morning Tea and a BBQ held for undergraduate students from Tsinghua University, China. A Careers Symposium was organised together with BAMBII (biochemistry) and the Vet Science student societies. The annual School of Chemistry Christmas Party also was a huge success due to the enthusiastic help of the CPS.

Good luck to the 2015 CPS committee.

MELBOURNE UNIVERSITY CHEMICAL SOCIETY (MUCS)

Program of Events for 2014

President: Assoc. Prof. Brendan Abrahams

Secretary: Dr George Khairallah

Treasurer: Dr Tich-Lam Nguyen

Student Representatives: Jess Holmes, Gautum Jain, Michael Leeming, Fabio Lisi, Alex McDonald and Tina Tezgerevska

March 5th

(Lecture 1023) 5.45 pm; Masson Theatre, Chemistry Building;
Selby Lecture: Prof. Ulrich Steiner, University of Cambridge; *How nature makes materials.*

March 12th

(Lecture 1024) 4.30 pm; Cuming Theatre, Chemistry Building;
Dr Matthew Hill, CSIRO; *Getting more from less: How porous materials can help improve sustainability.*

April 2nd

(Lecture 1025) 4.30 pm; Cuming Theatre, Chemistry Building;
Valda McRae Lecture: Emeritus Prof. Don Cameron, University of Melbourne; *What possible use can nuclear magnetic resonance spectroscopy have for chemistry?*

April 16th

(Lecture 1026) 4.30 pm; Cuming Theatre, Chemistry Building;
Dr Robin Hesketh, University of Cambridge; *Decision time for cancer therapy.*

May 14th

(Lecture 1037) 5.30 pm; Masson Theatre, Chemistry Building;
Lady Masson Lecture: Dr Daniela Stock, Victor Chang Cardiac Research Institute, *Visualising biological power converters at atomic resolution.*

May 28th

(Lecture 1038) 4.30 pm; Cuming Theatre, Chemistry Building
Prof. Paul Worsfold, Plymouth University, *Aquatic biogeochemistry—Environmental drivers and analytical challenges.*

September 10th

(Lecture 1039) 4.30 pm; Masson Theatre, Chemistry Building
Stranks Lecture: Prof. Len Lindoy, University of Sydney
Extended Diketone, Triketone and Polypyridine Derivatives—Versatile Building Blocks for Metallosupramolecular Chemistry.

September 24th

(Lecture 1040) 4.30 pm; Masson Theatre, Chemistry Building
Craig Medallist Lecture: Prof. Curt Wentrup, University of Queensland, *Reactive Intermediates and Unusual Molecules: Photo- and Thermo-chemistry of Tetrazoles, Sydnones, and Related Compounds.*

October 8th

(Lecture 1041) 4.30 pm; Masson Theatre, Chemistry Building
Feutrill Lecture: Paul Holgate, Holgate Brewhouse, *Chem School to Beer School.*

October 29th

(Lecture 1042) 4.30 pm; Masson Theatre, Chemistry Building
Prof. Gavin Reid, University of Melbourne, *Bridging the Chemical and Biological Sciences to Determine the Functional Role of Lipid Profile Alterations in Colorectal Cancer Malignancy and Metastatic Progression; Sponsored by Davies Collison Cave.*

November 12th

(Lecture 1043) 4.30 pm; Masson Theatre, Chemistry Building
Annual General Meeting and President's Address: Assoc. Prof. Brendan Abrahams, University of Melbourne, *Dynamic Processes within Crystals.*

December 3rd

(Lecture 1044) 4.30 pm; Cuming Theatre, Chemistry Building,
Prof. Philippe Dugourd, CNRS and Universite Lyon 1, *Action-FRET coupled to ion mobility: A new dimension to mass spectrometry*

STUDENT PRIZES AND AWARDS

AGILENT AWARD FOR EXCELLENCE

Katie Feng

Awarded to the student with the highest marks in the third year Chemistry research subject, with preference for student projects related to spectroscopy.

J S ANDERSON PRIZE

Jared Crabtree-Morton

Awarded to the student enrolled in the BSc (Honours), MSc or Postgraduate Diploma Chemistry, who is majoring in Chemistry and displays the greatest aptitude and potential for research.

JAMES CUMING MEMORIAL SCHOLARSHIP

Major: Jarad Crabtree-Morton

Minor: Jacob Rowan

Awarded to students who have fulfilled the requirements of the Bachelor of Science and who are enrolled to undertake further studies in the School of Chemistry through the BSc (Honours), MSc or Postgraduate Diploma Chemistry.

DIXON RESEARCH SCHOLARSHIP

Quentin Hong

Awarded to a fourth year student with the second highest results who is continuing on to a higher degree.

DULUX AUSTRALIA PRIZE

Stacey Rudd

Awarded by a selection committee to a Chemistry student who has completed the BSc. and is in the final year of the BSc (Honours), MSc or Postgraduate Diploma Chemistry.

DWIGHT PRIZE

James Ha

Awarded annually to the student with the highest aggregate marks in first year Chemistry subjects.

EXHIBITION PRIZE

Stanley Sim

Awarded annually to the student with the highest aggregate marks in first year Chemistry subjects.

THE THOMAS HEALEY AWARD

Christine Browne, Nicholas Kirkwood, Brendan Dyett and Anna Mularski

These PhD travel awards are given to enable students to attend a conference of international standing, at which the student will present the results of their research.

THE HUNTSMAN AUSTRALIA PRIZE

Peter McDonald

Awarded for an outstanding performance by a second year chemistry student proceeding to a major in 3rd year Chemistry.

KERNOT RESEARCH SCHOLARSHIP

Stacy Rudd

Awarded to a completing Chemistry student with the best Honours or MSc mark who is continuing onto a PhD or MPhil in the School of Chemistry.

THE ANDREW KIRBY AWARD FOR RESEARCH EXCELLENCE

Joses Grady Nathanael

Awarded to a Chemistry student entering a PhD in the School of Chemistry who has demonstrated excellent research potential in the BSc (Honours), MSc, MPhil or Postgraduate Diploma Chemistry who are continuing on to a higher degree in the School of Chemistry

THE MONICA ELIZABETH REUM MEMORIAL PRIZE

Jennifer Chambers

Awarded to a PhD student who submits for assessment an outstanding thesis in an area of Organic Chemistry.



Prof. Mark Rizzacasa & Prof. Frances Separovic present Jennifer Chambers (centre) the Monica Elizabeth Reum Memorial Prize.

RONALD RISEBOROUGH PRIZE

Lessa Evans

Awarded for the best research report in field of Applied Chemistry based on results achieved in BSc (Honours), MSc or Postgraduate Diploma Chemistry.

FRED WALKER SCHOLARSHIP

Liselle Aitkin

Awarded to a 3rd year student majoring in chemistry based on their averaged weighted third year results in Chemistry subjects, and who are continuing on in a BSc (Honours), MSc or Postgraduate Diploma in Science in the School of Chemistry.

C A TAYLOR PRIZE

Wenxiao Yue

Awarded to the most outstanding student in 2nd year Chemistry who is intending to major in Chemistry.

THE DR REX WILLIAMSON & FAMILY SCHOLARSHIP

Liselle Aitkin

Awarded to a 3rd year student for academic merit as determined by the highest third year BSc results in Organic Chemistry.



CHEMISTRY OUTREACH

The Chemistry Outreach Program gives school students and teachers access to fascinating and educational experiences in science and we particularly work with students in Years 9-12 and their teachers and run several public events throughout the year.

We were very pleased that the success of the program was recognised this year by the Dean's Award for Engagement and grants from the Victorian Department of Education and the Faculty of Science to continue our work with schools.

Highlights from 2014 include a session on the chemistry of the *Breaking Bad* television series during National Science Week. Participants made the substance used in the show for the *Blue Sky* (coloured toffee) and gained an understanding of the care and good processes needed for successful chemical syntheses.

With the Chemistry Education Association, staff from the School of Chemistry coordinated responses from more than 150 teachers on the Year 11 and 12 VCE Chemistry Study Design which will form the curriculum for senior students in Victoria until 2020. We believe that our feedback to the Victorian Curriculum and Assessment Authority will ensure that chemistry remains a well-taught and academically rigorous subject in schools.

The biggest outreach event of the year is the *Analytical Instrument Workshops*, where Year 12 students come to the University to study and use some of our instrumentation to detect and measure components of food. This year they measured the amount of salt in soy sauce, the caffeine concentration of coke and also analyzed seawater, determining its calcium content.

Teachers find the workshops incredibly useful as the students get a realistic experience of hands-on chemistry and students travel from all over Victoria for this experience. Aside from a large contingent of metropolitan schools, this year we had students leave their schools as early as 5 am to make a day trip from as far as Echuca, Nathalia and even Murrayville on the South Australian border.



Year 11 students participating in a SEAMS Chemistry Session. Photo Credits: Diane Ruka Program Manager

SUBJECTS

FIRST YEAR

Director: Carl Schiesser
Coordinator: Sonia Horvat

CHEM10003 Chemistry 1	Carl Schiesser
CHEM10004 Chemistry 2	Carl Schiesser
CHEM10006 Chemistry for Biomedicine	Carl Schiesser
CHEM10007 Fundamentals of Chemistry	Carl Schiesser

SECOND YEAR

Director: Colette Boskovic

CHEM20011 Environmental Chemistry	Spas Kolev
CHEM20018 Reactions and Synthesis	Colette Boskovic
CHEM20019 Practical Chemistry (Lab)	Jonathan White
CHEM20020 Structure and Properties	Colette Boskovic

THIRD YEAR

Director: Mark Rizzacasa

CHEM30012 Analytical and Environmental Chemistry (Lab)	Spas Kolev
CHEM30013 Chemical Research Project	Mark Rizzacasa
CHEM30014 Specialized Topics in Chemistry B	Mark Rizzacasa
CHEM30015 Advanced Practical Chemistry	Trevor Smith
CHEM30016 Reactivity and Mechanism	Mark Rizzacasa
CHEM30017 Specialized Topics in Chemistry A	Mark Rizzacasa

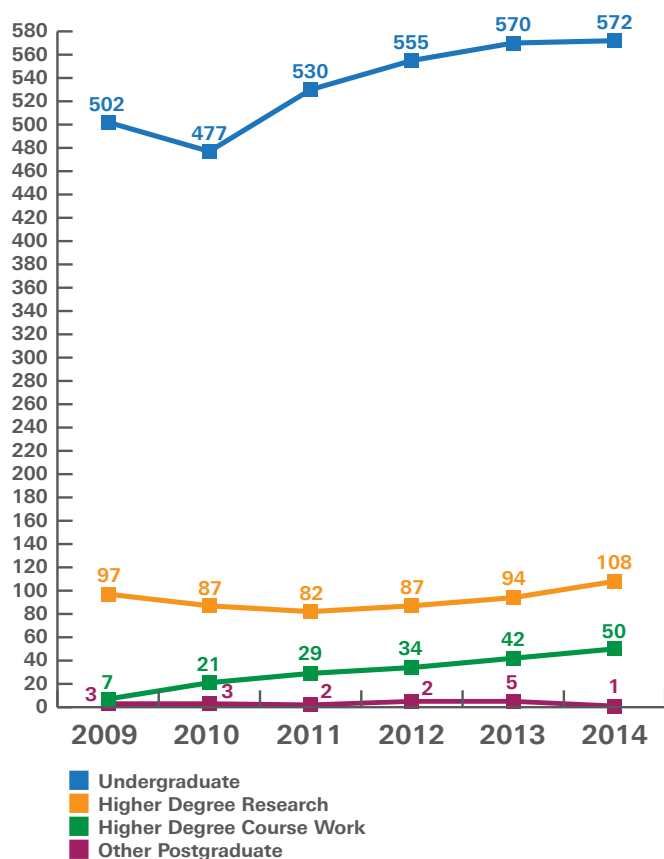
HIGHER YEAR LEVELS

Honours, MSc and PG Diploma in Chemistry	Craig Hutton
PhD and MPhil	Brendan Abrahams



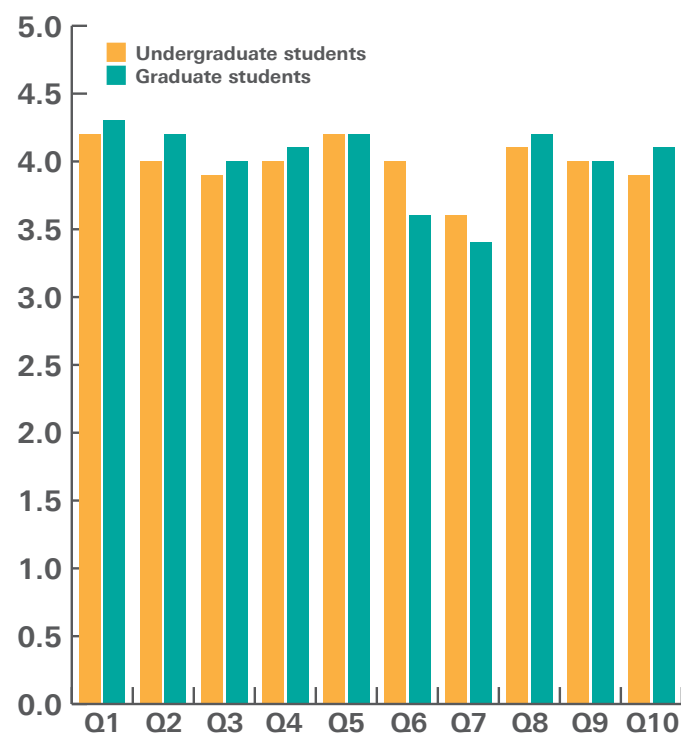
KEY TEACHING AND LEARNING STATISTICS

TEACHING LOAD

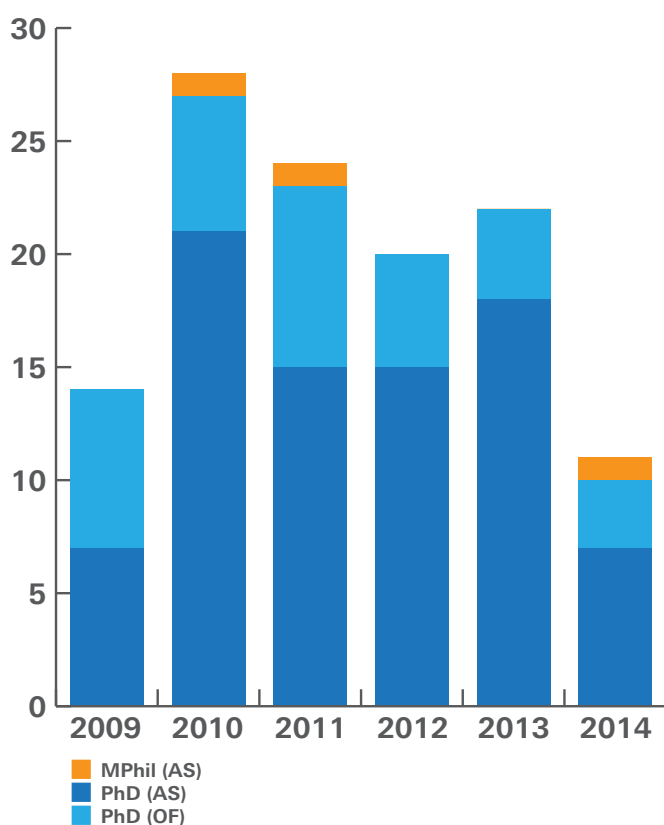


2014 STUDENT EXPERIENCE SURVEY

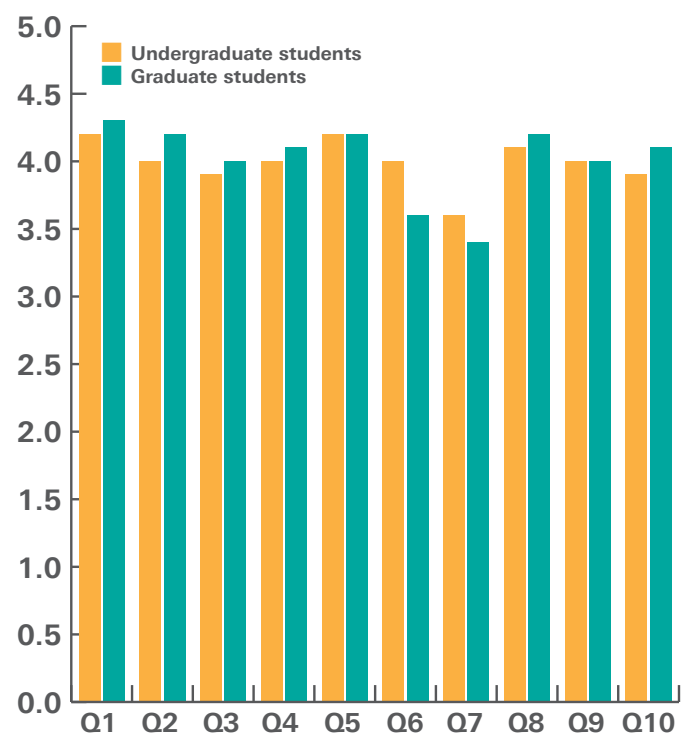
Semester 1



RESEARCH COMPLETIONS BY YEAR



Semester 2



Q1 Intellectually stimulating
Q2 Well-coordinated
Q3 Learning resources
Q4 Well taught
Q5 High standard

Q6 Useful assessment
Q7 Valuable feedback
Q8 New ideas
Q9 Apply to practice
Q10 Learning community

RESEARCH HIGHER DEGREE STUDENT COMPLETIONS



GARY BEANE

Excitation energy transfer in nanocrystal systems



DAVID HAYNE

Technetium complexes for diagnostic imaging of amyloid- β plaques to assist in the diagnosis of Alzheimer's disease



YAYA BONGGOTGETSAKUL

The use of polymer inclusion membranes (PIMs) for the recovery of gold(III) from highly acid solutions and the preparation of monolayers of precious metal nanoparticles



DAYNA STURGES

Synthesis of alkyl citrate natural products



JENS BROSE

Molecular aspects of copper transport in human cells: do Atox1 and hGrx1 have complementary roles?



JOSEPH VARGA

Colloidal synthesis of nanocrystal particles for thin film solar cells



FRANCESCA CAVALIERI

Ultrasonic synthesis and characterization of multifunctional nano/microcapsules



IDA WIDNERSSON

Core-shell structures in dye-sensitised solar cells



JENNIFER CHAMBERS

Synthesis and biological evaluation of episilvestrol analogues



ATHANASIOS ZAVRAS

Synthesis, structure and reactivity of ligand stabilized coinage metal nanoclusters



MARK GREGORY

Synthesis of phosphatidylinositol polyphosphate and inositol polyphosphate derivatives to probe signalling in tumour cells

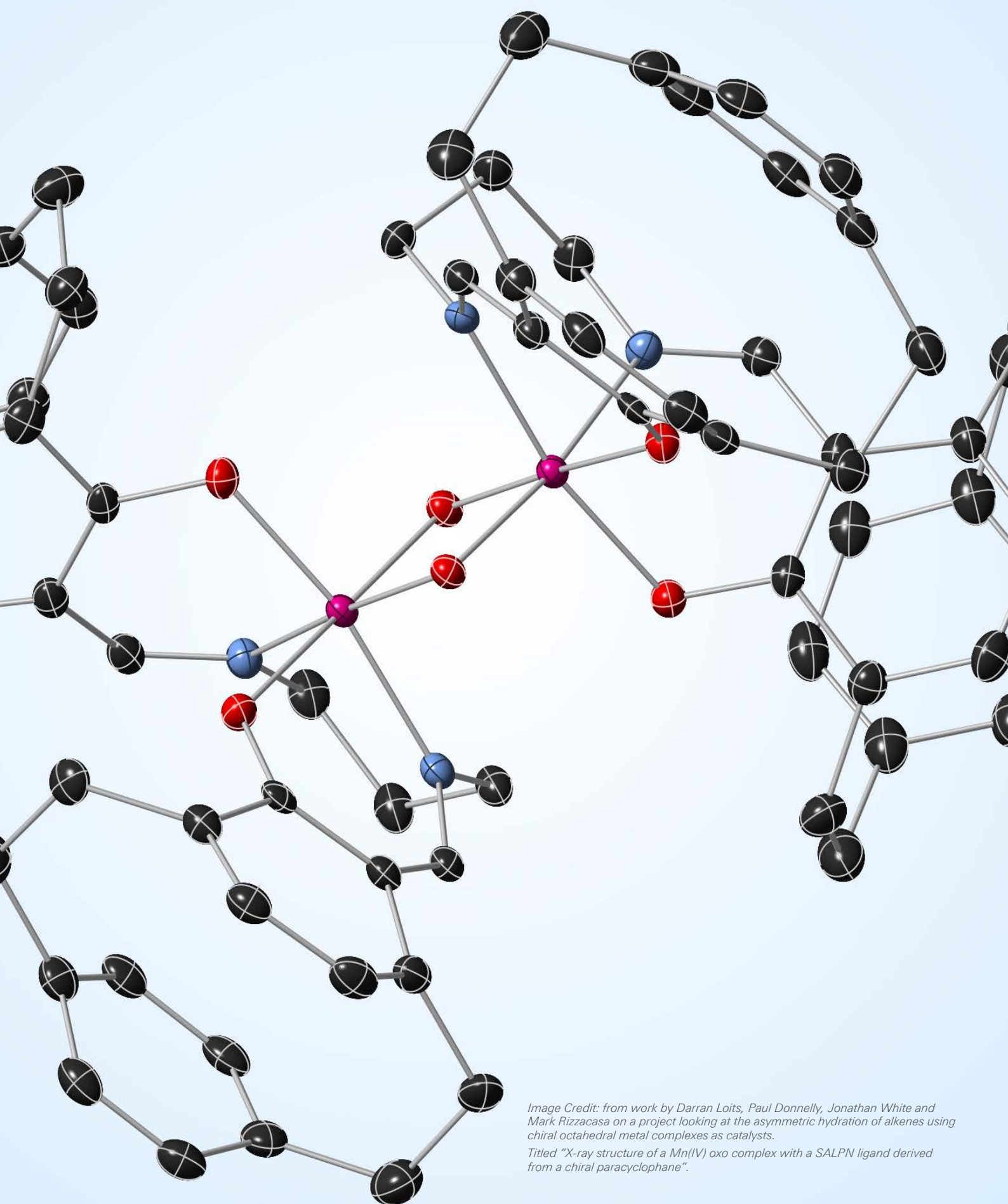


Image Credit: from work by Darran Loits, Paul Donnelly, Jonathan White and Mark Rizzacasa on a project looking at the asymmetric hydration of alkenes using chiral octahedral metal complexes as catalysts.

Titled "X-ray structure of a Mn(IV) oxo complex with a SALPN ligand derived from a chiral paracyclophane".

RESEARCH

HIGHLIGHTS 2014

Research in the School of Chemistry is focused around two main themes - 'Advanced Materials and Characterisation' (chemistry aimed at the preparation, characterisation, understanding and application of functional materials) and 'Biological Chemistry and Synthesis' (understanding the underlying chemical basis of biological processes and applications of synthesis to problems in materials and biology). Within these two broad themes research groups of staff undertake a wide range of research programs supported by funding from national and international research agencies, government and industry. A number of the School's research groups are located in the University's Bio21 Institute where they are supported by some of the nation's leading equipment facilities including NMR, mass spectrometry and electron microscopy. Members of the School are also associated with the Melbourne Energy Institute, Australian Centre for Advanced Photovoltaics (ACAP), and the Centre for Aquatic and Pollution Identification and Management (CAPIM). The Surface and Chemical Analysis Network (SCAN) is a School of Chemistry facility for materials and environmental analysis that connects industry users with University researchers.

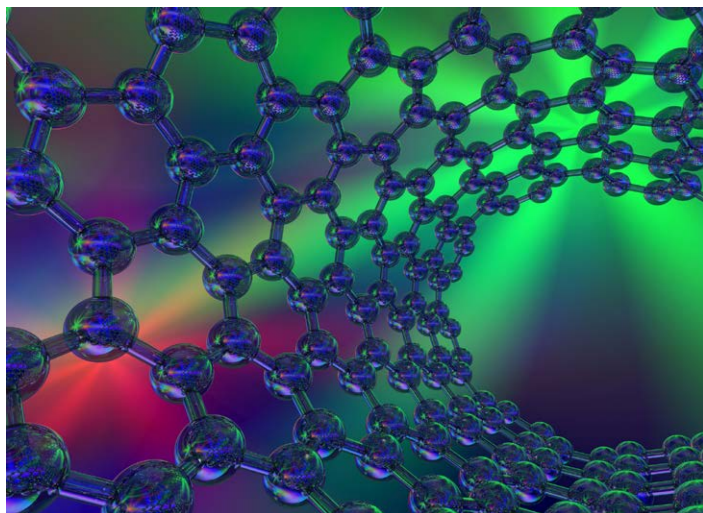
Some highlights of the School's research efforts during 2014 were:

- The School was again very successful with national competitive grant funding (ARC and NHMRC) with the following projects receiving initial funding for 2014.

Dr Lars Goerigk	Quantum refinement of DNA X-ray structures
Dr Paul Donnelly	Site-specific conjugation of zirconium and copper complexes to antibodies for application in diagnostic imaging and therapy
Assoc. Prof. Spencer Williams	Breaking it down: dissecting the mechanism and exploring new inhibition strategies for polysaccharide cleaving enzymes
Dr Wallace Wong	Self-organised materials for flexible electronics
Assoc. Prof. Craig Hutton	Chemical probes for the study of a unique enzyme from <i>Mycobacterium tuberculosis</i>
Prof. Mark Rizzacasa	Total synthesis of Myxobacteria metabolites and analogues
Prof. Carl Schiesser	Radicals in unconventional media - improving the sustainability of radical reactions through next generation ionic liquid radical chemistry
Prof. Frances Separovic	Structure and activity determination of membrane-active peptides
Prof. Frances Separovic Dr Marco Sani	Biomembrane interactions facility

- The ARC Centre of Excellence for Free Radical Chemistry and Biotechnology continued without formal ARC Centre Funding in 2014 and produced 52 journal articles, gave 48 conference presentations, wrote two book chapters and filed three patent applications.

- The School of Chemistry is a node of the Australian Centre for Advanced Photovoltaics that undertakes research into the next generation of solar cells and photovoltaic materials. The School's programs form part of a \$33 million funding commitment from the Australian Renewable Energy agency that commenced in 2013 for up to 8 years.



The quality of our researchers is recognized by awards for research excellence including:

- ARC Future Fellowships for Paul Donnelly, Spencer Williams and Wallace Wong
- Two Group of Eight Australia – Germany Joint Research Co-operation Schemes were awarded to - 1) Prof. Rob Lamb and Dr Alex Wu. 2) Lars Goerigk
- Prof. Richard O'Hair elected as an inaugural Fellow of the Australian New Zealand Society for Mass Spectrometry (ANZSMS)
- National Computational Merit Allocation Scheme (NCAMAS) awarded to Lars Goerigk
- McKenzie Fellowship to Dr Yuning Hong
- DECRA Fellowship to Dr Lei Zhang
- MNI Interdisciplinary Seed Funding to Yuning Hong
- Dyason Award to Spas Kolev
- Ian Potter Foundation Award to Lars Goerigk
- CNRS grant to Dr Marco Sani and Prof. Frances Separovic
- Selby Award to Lars Goerigk
- IRRTF grant Awards to Prof. Carl Schiesser and Assoc. Prof. Michelle Gee
- Dean's Award for Excellence in Research to Dr Colette Boskovic, Dean's Award for Excellence in EH&S Bryan McGowan, and Mick Moylan.
- Grimwade Prize to Chris Burns
- Department of Education and Earl Childhood Development Grant to Mick Moylan
- Cultural and Community Grant awarded to Renee Beale
- Coating Science International Conference Award to Alex Wu
- ACS Petroleum Research Fund Grant to Mark Rizzacasa
- David Syme Research Prize to Spencer Williams

RESEARCH AREAS

The School currently conducts research in the following areas:

Advanced Materials and Nanoscience which includes:

complex fluids, nanoporous materials, nanotechnology, organic electronic materials, photovoltaics, polymers, quantum dots, solar cells, and surface coating.

Analytical and Environmental Chemistry which includes:

proteomics & lipidomics, environmental fate of pollutants, phytoremediation, flow analysis methods, passive sampling, green chemistry, membrane separation and trace element analysis.

Biological and Medicinal Chemistry which includes:

biological macromolecules, biophysics, biotechnology, metalloenzymes and model complexes, molecular nutrition, and pharmaceutical chemistry.

Inorganic Chemistry which includes:

bioinorganic chemistry, catalysis, coordination chemistry, inorganic materials, metal ion dynamics, organometallic chemistry, and transition metal chemistry.

Molecular Design and Synthesis which includes:

catalyst design, computational chemistry, free radical chemistry, ligands and metal complexes, macromolecules, supramolecular chemistry and templates.

Organic Chemistry which includes:

bioorganic chemistry, carbohydrate and peptide chemistry, free radical chemistry, natural product synthesis, physical organic chemistry and structural organic chemistry.

Physical Chemistry which includes:

photochemistry, sonochemistry, spectroscopy, surface science, theoretical and quantum chemistry.

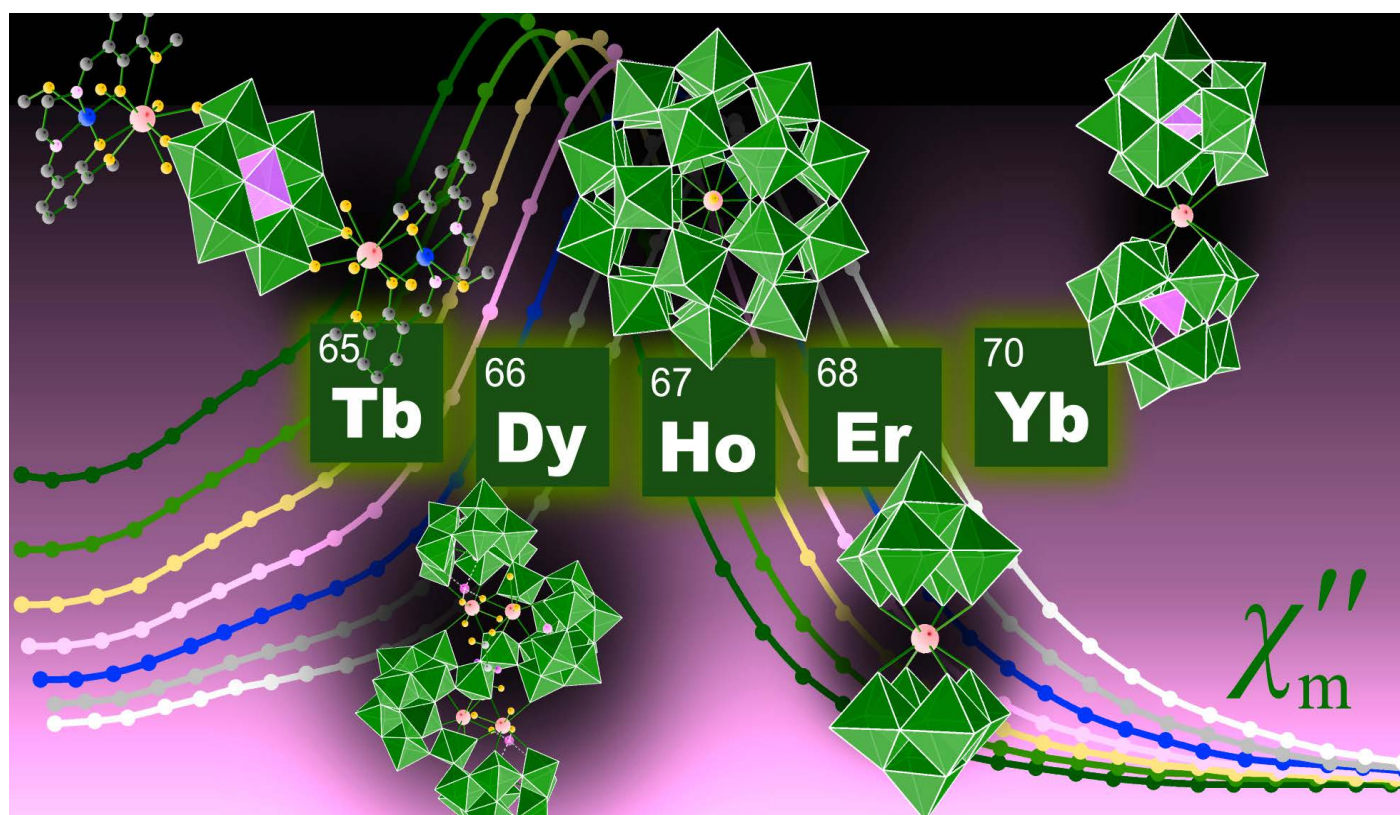


Image Credit: From work by M.Vonci, C. Boskovic, "Polyoxometalate-Supported Lanthanoid Single-Molecule Magnets"

CONFERENCES 2014

Dr Mayumi Allinson	May	23rd Symposium on Environmental Chemistry	Kyoto, Japan
	September	9th Society of Environmental Toxicology and Chemistry (SETAC) Asia Pacific Conference	Adelaide
	November	Symposium on Human Impacts on Oceanic Environment, Ecosystem and Fisheries	Nagasaki, Japan
Prof. Muthupandian Ashokkumar	June	14th Meeting of the European Sonochemical Society (ESS14)	Avignon, France
Dr Stephen Best	June	15th International Congress of Quantum Chemistry	Beijing, China
	September	17th Triennial International Council of Museums (ICOM-CC)	Melbourne
Prof. Evan Bieske	May	East Asian Workshop on Chemical Dynamics	Pusan, Korea
	July	5th Asia Oceania Mass Spectrometry Conference	Beijing, China
	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Dr Colette Boskovic	July	Frontiers in Metal Oxide Cluster Science (FMOCS)	Paris, France
	July	International Conference on Coordination Chemistry (ICCC41)	Singapore
Assoc. Prof. Rachel Caruso	July	5th Australian China Symposium for Materials Science	Wollongong
	August	65th Annual Meeting of the International Society of Electrochemistry	Lausanne, Switzerland
	November	3rd Biennial Conference of the Combined Australian Materials Society (CAMS)	Sydney
Mrs Penny Commons	February	STAV Chemistry Teachers Conference	La Trobe University
	November	CEA November Lectures	Bio21
Dr Cottam Jade	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Dr Augustine Doronila	June	8th International Conference for Serpentine Ecology	Sabah, Malaysia
	July	Occasional workshop on Phytomining in Australasia	Univ of Qld, Brisbane
	November	2nd Conference of the Society for Ecological restoration - Australasia	Nuomea, New Caledonia
	March	IPWEA 2014 Institute for public works engineering Australasia Regional Conference Victoria	Melbourne
Dr Paul Donnelly	February	Australia and New Zealand Society of Nuclear Medicine (ANZSNM)	Melbourne
	July	41st International Conference on Coordination Chemistry	Singapore
	December	7th Asian Bioinorganic Chemistry Conference	Gold Coast
Dr Viktoras Dryza	May	The 6th International Conference on Hybrid and Organic Photovoltaics	Lausanne, Switzerland
	December	Royal Australian Chemistry Institute PhysChem Student Conference	Adelaide
	December	Asia-Pacific Solar Research Conference	Sydney
Dr Ines Gameiro Almeida	September	18th International Conference on Flow Injection Analysis	Oporto, Portugal
	October	Society of Environmental Toxicology and Chemistry (SETAC) Australasia	Melbourne
	December	19th International Conference on Flow Injection Analysis	Fukuoka, Japan
Assoc. Prof. Michelle Gee	August	International Workshop in Colloid and Interfacial Science, Technology, Engineering and Mathematics (STEM)	Cancun, Mexico
Prof. Ken Ghiggino	May	Australia India Workshop on Smart Functional Nanomaterials (ISRF) Workshop	Bangalore, India
	July	25th International Union of Pure and Applied Chemistry (IUPAC) Photochemistry Symposium	Bordeaux, France
	August	Excitonic Photovoltaics (XPV) 2014	Telluride, USA
	November	8th Asian Photochemistry Conference	Trivandrum, India
	December	2nd ACAP Research Conference	Sydney
Dr Lars Goerigk	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide

Prof. Franz Grieser	April	Elsevier Research Impact Forum	Melbourne
Prof. Andrew Holmes	February	CNR Rao Lecture, Chemical Research Society of India	Mumbai, India
	February	IWAM-2014	Ras Al Khaimah, UAE
	March	ACS 247th National Meeting, Energy and Fuels	New Orleans, USA
	March	McRae Lecture, Queens University	Ontario, USA
	April	Materials Research Society Spring Meeting	San Francisco, USA
	July	Sixth Oceanic Conference on International Studies	Melbourne, Australia
	August	ACS 248th National Meeting, Polymer Chemistry	San Francisco, USA
	November	Commonwealth Science Conference	Bangalore, India
	November	KAUST Solar Future Meeting	Saudi Arabia
Dr Yuning Hong	November	Proteostasis and Disease Symposium	Wollongong
	November	RACI Peptide Users Group Spring Symposium	Melbourne
Dr Joel Hooper	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Dr James Hutchison	June	Gordon Conference on Noble Metal Nanoparticles	Massachusetts, USA
Assoc. Prof. Craig Hutton	July	Gordon Research Conferences; Organic Reactions and Processes	Rhode Island, USA
	July	Gordon Research Conferences; Natural Products	New Hampshire, USA
	September	Gregynog Synthesis Workshop	Newtown, Wales
	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Dr David Jones	May	Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)	Bangalore, India
	October	Australian India Strategic Research Fund (AISRF) Workshop	Melbourne
Dr George Khairallah	June	62nd American Society for Mass Spectrometry (ASMS) Conference	Baltimore, USA
Prof. Spas Kolev	February	2nd Annual Conference on Chemistry, Chemical Engineering and Chemical Process	Singapore
	February	Symposium on Emerging Trends in Separation Science and Technology	Mumbai, India
	July	8th National Conference on Chemistry	Sofia, Bulgaria
	October	3rd Global Conference on Material Science and Engineering (CMSE)	Shanghai, China
	November	6th International Conference of Ion Exchange	Okinawa, Japan
	December	19th International Conference on Flow Injection Analysis	Fukuoka, Japan
Prof. Robert Lamb	June	17th International Congress on Marine Corrosion and Fouling (ICMCF)	Singapore
	June	Application of Synchrotron Imaging for Crop Improvement	Saskatoon, Canada
	October	Agricultural Bioscience International Conference	Saskatoon, Canada
Mr Mick Moylan	February	VCE Chemistry Conference	Melbourne
	July	Gippsland Science Educators Conference	Melbourne
Prof. Paul Mulvaney	February	International Conference on Nanoscience and Nanotechnology (ICONN)	Adelaide
	March	American Chemical Society (ACS) Conference	Dallas, USA
	March	Frontiers in Plasmonics Conference (FOP3)	Xiamen, China
	July	8th Asian Photochemistry Conference	Kerala, India
	July	Royal Society Conference on Global Artificial Photosynthesis	Chitcheley, UK
	August	ACS Nano and NanoLetters Joint Symposium	San Francisco, USA
	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Dr Tich-Lam Nguyen	February	International Conference on Nanoscience and Nanotechnology (ICONN)	Adelaide

Prof. Richard O'Hair	April	11th Uppsala Conference (UppCon) on Electron Capture and Transfer Dissociation	Innsbruck, Austria
	April	International Bunsen Discussion Meeting, Gas Phase Model Systems for Catalysis (GPMC)	Ulm, Germany
	June	62nd American Society for Mass Spectrometry (ASMS) Conference	Baltimore, USA
	August	22nd International Union of Pure and Applied Chemistry (IUPAC) International Conference in Physical Organic Chemistry	Ottawa, Canada
	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Ms Adabelle Ong	January	Asian Spectroscopy Conference	Singapore
Dr Brett Paterson	September	Dalton Discussion 15 - Metal ions in medical imaging: optica, I radiopharmaceutical and MRI contrast	York, UK
Prof. Reid Gavin	April	American Association for Cancer Research Annual Meeting	San Diego, USA
	June	62nd American Society for Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics	Baltimore, USA
	September	ComBio Conference	Canberra
	October	4th Workshop on Clinical and Applied Proteomics	Montreal, Canada
	November	1st Australasia Extracellular Vesicles Conference	Cairns
	December	2nd Australian Lipid Meeting	Wollongong
Dr Chris Ritchie	July	Frontiers in Metal Oxide Cluster Science (FMOCS)	Paris, France
Prof. Mark Rizzacasa	July	IUPAC 20th International Conference on Organic Synthesis (ICOS20)	Budapest, Hungary
	September	Mander Symposium, Australian Academy of Science	Canberra
Dr Marc-Antoine Sani	February	58th Biophysical Society Meeting	San Francisco, USA
	July	18th International Union of Pure and Applied Biophysics (IUPAB) Conference	Brisbane
Prof. Carl Schiesser	June	The Science Teachers Association of Victoria Lab Tech Conference	Melbourne
	June	International Conference on Hydrogen Atom Transfer (iCHAT)	Frascati, Italy
	July	The European Association for Chemical and Molecular Sciences (EUCHEMS) Conference on Organic Free Radicals	Prague, Czech Republic
	November	Workshop on Selenium and Tellurium Chemistry (WSeTe)	Santa Maria, Brazil
	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Prof. Frances Separovic	February	58th Biophysical Society Meeting	San Francisco, USA
	May	Science at the Shine Dome Symposium	Canberra
	June	Croatian Diaspora Congress	Zagreb, Croatia
	July	FASEB Meeting: Molecular Biophysics of Membranes	Big Sky, Montana
	August	18th International Union of Pure and Applied Biophysics (IUPAB) Conference	Brisbane
	October	12th International School of Biophysics	Primosten, Croatia
	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Assoc. Prof. Trevor Smith	October	11th Asian International Seminar on Atomic and Molecular Physics (AISAMP)	Sendai, Japan
	December	National Fluorescence Workshop	Pune India
Dr Alesssandro Soncini	February	1st (SANZMAG) Southampton Australia New Zealand Workshop on Molecular Magnetism	Sydney
	July	International Conference on Molecule-Based Magnets (ICMM)	St Petersburg, Russia
Assoc.Prof. Peter Tregloan	December	Collaborative Universities Biomedical Education Network (CUBENet) Forum	Canberra
Dr Willem Van den Heuvel	July	International Conference on Molecule-Based Magnets (ICMM)	St Petersburg, Russia
Prof. Anthony Wedd	July	2014 Conference of the International Biometals Society	Durham NC, USA
	October	9th International Copper Meeting	Vico Equenze, Italy
	December	7th Asian Bioinorganic Chemistry Conference	Gold Coast
Prof. Jonathan White	August	International Union of Crystallography	Montreal, Canada

Assoc. Prof. Uta Wille	July	The European Association for Chemical and Molecular Sciences (EUCHEM) Conference on Organic Free Radicals	Prague, Czech Republic
	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
	December	Annual Meeting of the Society for Free Radical Research Australasia	Melbourne
Assoc. Prof. Spencer Williams	November	10th Society for Glycobiology Symposium	Hawaii
	December	Royal Australian Chemical Institute (RACI) National Convention	Adelaide
Dr Wallace Wong	June	The International Conference on Synthetic Metals (ICSM)	Turku, Finland
	December	Asia Pacific Solar Research Conference	Sydney
Dr Xiao Zhiguang	December	7th Asian Conference on Biological Inorganic Chemistry	Gold Coast

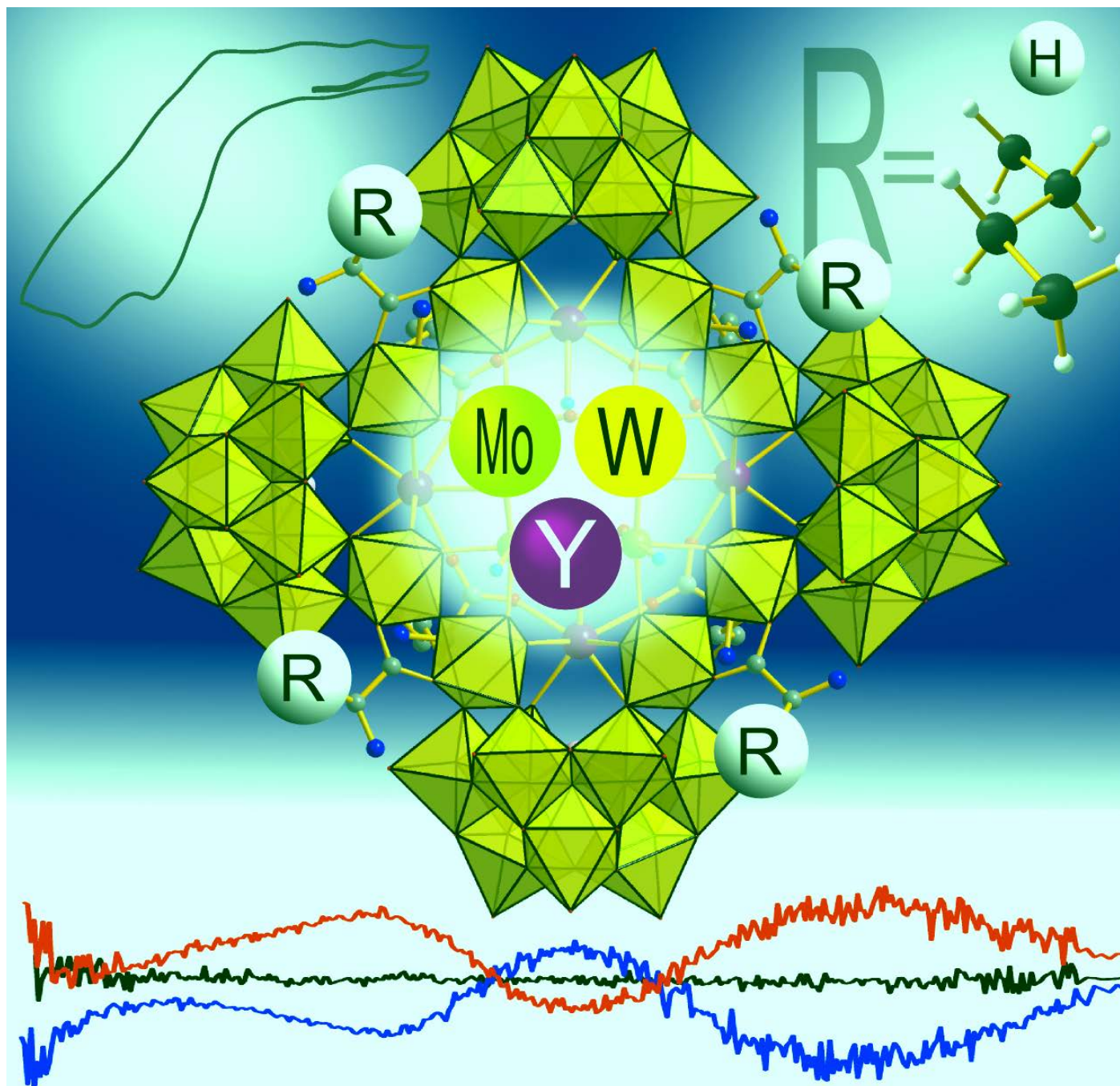


Image Credit: M. Vonci, F. Akhlaghi Bagherjeri, P. D. Hall, R. W. Gable, A. Zavras, R. A. J. O'Hair, Y. Liu, J. Zhang, M. Field, M. Taylor, J. Du Plessis, G. Bryant, M. Riley, L. Sorace, P. Aparicio, X. López, J. M. Poblet, C. Ritchie, C. Boskovic, "Modular Molecules: Site-Selective Metal Substitution, Photoreduction and Chirality in Polyoxometalate Hybrids"

INORGANIC AND ANALYTICAL CHEMISTRY SEMINAR PROGRAM

Coordinator: Prof. Tony Wedd

E: agw@unimelb.edu.au

7 February

Prof. Kyo Han Ahn, Pohang University of Science and Technology

"Complex chiral colloids for visible and ultraviolet plasmonics."

11 March

Mr Jens Brose, University of Melbourne

"Uptake and Distribution of Copper in Human Cells" - PhD Completion Seminar

18 March

Ms Manori Jayawardane, University of Melbourne

"The Potential of Paper in Environmental Monitoring" - PhD Completion Seminar

25 March

Prof. Richard Keene, University of Adelaide

"Polypyridyl Ruthenium(II) Complexes as Cytotoxic Lipophilic Cations: New Paradigms for Old Molecules?"

1 April

Prof. Shaorong Liu, Oklahoma University

"Development and Application of High-Pressure Electro-osmotic Pumps"

8 April

Dr Simon James, Australian Synchrotron

"In Situ Speciation of Cellular Iron Protein Load: Quantifying Iron Metabolism Using X-rays"

15 April

Dr David Wilson, La Trobe University

"Adventures in Low Oxidation State Main Group Chemistry: The Chemistry of Inconvenient Elements"

29 April

Prof. Leroy Cronin, University of Glasgow

"Explaining the Self Assembly of Gigantic Molecular Structures"

13 May

Mr Edward Nagul, & Ms Tina Tezgerevska, University of Melbourne

"The Kitchen Sink: The Chemistry of Nuclear Waste Reprocessing; & Atomic Force Microscopy: Visualizing Molecular Machines and Mechanics "

20 May

Ms Saumya Udagedara, University of Melbourne

"The Challenges of Isolation and Study of a Membrane Metal Pump" - Phd Completion Seminar

27 May

Prof. Paul Worsfold, University of Plymouth

"On Your Bike - Analytical Tools for Investigating Trace Element Cycling in the Oceans "

1 July

Prof. Matt Shores, Colorado State University

"Targeted paramagnetic complexes for sensing, solar and other aspects of world domination"

5 August

Dr Richard Mole, ANSTO

"Switchable Magnetism in a Porous Coordination Polymer"

12 August

Dr Stuart Mills, Museum Victoria

"Minerals and Museum Victoria: Natural Inorganic Substances"

19 August

Prof. Matthew Wooley, University of Melbourne

"Gas Phase studies of Nickel, Palladium & Platinum Carboxylates"

26 August

Ms Yukie O'Bryan, University of Melbourne

"Novel Polymer Inclusion Membranes and Fibres for Extraction of Thiocyanate" - PhD Completion Seminar

2 September

Dr Bradford Moffat, Brain Imaging Laboratory, Royal Melbourne Hospital

"Theranostic nanomaterials for imaging and treatment of cancer"

9 September

Dr Max Massi, Curtin University

"Tetrazolato and N-heterocyclic Carbene Metal Complexes: New Avenues for Optical Molecular Imaging and Photo-Activated Therapies"

16 September

Mr Robert Elliott, University of Melbourne

"Coordination polymers containing redox active ligands" - PhD Completion Seminar

14 October

Mr Lachlan McInnes, & Mr Michele Vonci, University of Melbourne

"Discovery of the Last Seven Elements : Quasicrystals: A Fascinating Area Between Mathematics and Material Science"

28 October

Prof. Rob Capon, University of Queensland

"Biodiscovery: Analyzing Nature. Targeting Pain, Cancer and Infectious Diseases"

ORGANIC CHEMISTRY SEMINAR PROGRAM

Coordinator: Dr Wallace Wong

E: wwhwong@unimelb.edu.au

14 February

Mr Mark Gregory, University of Melbourne

"Synthesis and biological evaluation of phosphatidylinositol phosphate chemical probes" - PhD Completion Seminar

21 February

Prof. Tadeusz Molinski, University of California, San Diego

"Heterocyclic Marine Natural Products from the 'Wine Dark Sea'"

7 March

Prof. Bakthan Singaram, University of California, Santa Cruz

"Aminol Pharm: Asymmetric syntheses and utilization of chiral, non-racemic amino alcohols"

26 March

Prof. Kendall Houk, University of California, Los Angeles

"Cycloadditions in Synthesis, Chemical Biology, and Materials Chemistry: Dynamics and Mechanisms"

28 March

Dr Ethan Goddard-Borger, Walter and Eliza Hall Institute

"Towards Enzyme Enhancement Therapies for Gaucher Disease"

4 April

Dr Luke Connal, University of Melbourne

"Enzyme mimetics: an artificial catalytic triad"

11 April

Dr Yu-Ying Lai, University of Melbourne

"Rhenium-based Olefin Metathesis: solid state, gas phase, and solution"

23 May

Prof. Forrest Michael, University of Washington

"New Alkene Animation Reactions for the Synthesis of Nitrogen Heterocycles"

30 May

Dr Jade Cottam, University of Melbourne

"Studying the interactions of IGF-II analogues with type 1 IGF and insulin receptors"

6 June

Ms Caroline Kyi, University of Melbourne

"Controlling the biodeterioration of cultural materials: Investigations into free radical, nitric oxide-based treatments" – PhD Completion Seminar

24 June

Prof. Elsa Reichmanis, Georgia Institute of Technology

"Polymeric Semiconductors: Molecular Ordering, Charge Transport and Macroscale Mobility"

8 July

Dr Brian Chia, Agency for Science, Technology and Research

"Peptidomimetic Inhibitors against the Dengue Virus NS3 Protease"

18 July

Ms Vinojini Nair, University of Melbourne

"Human Relaxin-2: The design, synthesis and development of novel agonists and antagonists" – PhD Completion Seminar

25 July

Prof Harry Brumer, University of British Columbia

"Carbohydrate-active enzyme discovery and applications"

1 August

Ass. Prof. Tsuyoshi Michinobu, Tokyo Institute of Technology

"New Click Chemistry for the Synthesis of Functional Molecules and Polymers"

9 August

Prof Peter Scammells, Monash University

"Orthosteric, Allosteric and Bitopic Ligands Acting at G Protein-Coupled Receptors" – PhD swansong

15 August

Professor George Barany, University of Minnesota

"Reflections on a Half Century of Solid-Phase Peptide Synthesis"

16 August

Professor Fabian Mohr, University of Wuppertal

"Metals in Medicine: Quo vadis?"

22 August

Dr Matthew Cook, Queens University Belfast

"New allylic rearrangements. Stereoselective sigmatropic and pallylic reactions"

23 August

Dr Ullrich Jahn, Institute of Organic Chemistry and Biochemistry Academy of Sciences, Czech Republic

"A journey from organic methodology development to the total synthesis of natural products, their biological investigation and back"

30 August

Dr Derek Wilson, York University, Canada

"Structural Disorder in Protein Function and Pathogenic Aggregation"

6 September

Darran Loits, University of Melbourne

"Studies Towards the Synthesis of the Myxobacterium Metabolite Rhizopodin" – PhD Completion Seminar

13 September

Dr Joel Hooper, University of Oxford

"Rhodium catalysed hydroacylation and C-S bond activation"

18 September

Jenny Chambers, University of Melbourne

"Synthesis and biological evaluation of episilvestrol analogues" – PhD Completion Seminar

25 October

Professor Stephen J. Blanksby, University of Wollongong

"Elucidating lipid structural diversity by mass spectrometry"

15 November

Nicolas Fisk, University of Melbourne

"Towards the Total Synthesis of Aranotin and the Oxepin containing Dithiodiketopiperazines" – PhD Completion Seminar

12 December

Dr Sam Stranks, University of Oxford

"High Performance Solar Cells Incorporating Organo-lead Halide Perovskites"

16 December

Prof Seth Marder, Georgia Institute of Technology

"Charge injection and collection at electrode interfaces"

PHYSICAL CHEMISTRY SEMINAR PROGRAM

Coordinator: Assoc. Prof Rachel Caruso **E: rcaruso@unimelb.edu.au**

7 February

Prof. David Norris, Swiss Federal Institute of Technology
"Complex chiral colloids for visible and ultraviolet plasmonics "

3 March

Prof. Harald Morgner, Wilhelm-Ostwald Institute, University Leipzig
"Fluid adsorption in mesopores: critical remarks on the validity of thermodynamics for confined systems"

17 March

Prof. Kevin Webb, Purdue University, West Lafayette, USA.
"Optical Metamaterials and New Dimensions for Controlling Light"

24 March

Prof. Yinghe He, James Cook University
"In pursuit of a balance in engineering research"

28 April

Prof. Evan Bieske, University of Melbourne
"Using light to change the shape of molecular ions"

12 May

Dr Gareth Williams, University of Edinburgh
"Photochemistry and fluorescence spectroscopy in photonic crystal fibre microreactors"

19 May

Ms Akalya Shanmugan, University of Melbourne
"Ultrasonic formation of stable food emulsions for the delivery of nutrients" – PhD completion seminar

23 June

Dr Carla Meledandri, University of Otago
"Development of antibacterial silver nanocomposite materials for application in clinical dentistry"

3 July

Assoc. Prof. Amy Prieto, Colorado State University
"Inexpensive, efficient approaches for energy production and storage"

21 July

Dr Fang Xia, CSIRO MSE & PSE
"In situ powder X-ray diffraction – a powerful tool in unveiling the mechanism of solvothermal materials synthesis"

28 July

Dr Syma Khalid, University of Southampton
Jemma Trick, University of Oxford
"In silico optimisation of nanopores: gating and DNA sequencing"

30 July

Prof. David Millar, Scripps Research Institute, USA
"Conformational dynamics of a G protein-coupled receptor at the single-molecule level "

7 August

Assoc. Prof. Lilo Pozzo, University of Washington
"Self-assembly of nanoparticle surfactants and their use as theranostic agents "

11 August

Dr Lars Goerigk, University of Melbourne
"A trip to the density-functional zoo: Computational applications to excited states, thermochemistry and biomolecular structures "

18 August

Dr Xingdong Wang, CSIRO Materials Science and Engineering
"Porous TiO₂ based materials: From synthesis to photocatalytic applications"

25 August

Dr Wei Li, Materials Science and Engineering
"Hierarchically nanostructured materials for removing toxic ions from water "

25 August

Dr Tomislav Vuletic, Institute of Physics, Zagreb, Croatia
"Static conformation and dynamics of polyelectrolytes"

8 September

Mr William McMaster, University of Melbourne
"Biomaterial Porous Networks of Hydroxyapatite and Titanium Dioxide" – PhD completion seminar

6 October

Prof. Ying Chen, Deakin University
"Nanostructured composites for high-performance energy storage in Li-ion batteries and supercapacitors"

13 October

Prof. Muthupandian Ashokkumar, University of Melbourne
"Ultrasonics and Sonochemistry for Functional Materials and Food Processing"

10 November

Mr Adah Yusof, University of Melbourne
"The effect of ultrasonics on micelle systems"

24 November

Liem X. Dang, Northwest National Laboratory
"Understanding the Rates and Molecular Mechanism of Water-Exchange around Aqueous Ions using Molecular Simulations"

5 December

Prof. Garry Rumbles, CSIRO, Manufacturing Flagship
"Engineering Metal Organic Frameworks"

8 December

Dr Paolo Falcaro, Stranski-Laboratorium für Physikalische und Theoretische Chemie, TU Berlin
"Forces across thin liquid films"

15 December

Prof. Daniel R. Gamelin, Department of Chemistry, University of Washington
"Synthesis and Spectroscopy of Doped Quantum Dots"

PUBLICATIONS 2014

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- Abrahams, B. F.**, Elliott, R. W., & **Robson, R.** (2014). Coordination polymers constructed from TCNQ(2-) anions and chelating ligands. *Australian Journal of Chemistry*, 67(12), 1871-1877.
- Hu, F.-L., Wang, S.-L., Lang, J.-P., & **Abrahams, B. F.** (2014). In-situ X-ray diffraction snapshotting: Determination of the kinetics of a photodimerization within a single crystal. *Scientific Reports*, 4, 6 pages.
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- White, K. F., **Abrahams, B. F.**, Maynard-Casely, H., & **Robson, R.** (2014). Li⁺ and Ca²⁺ Derivatives of the isonicotinate-n-oxide ion including single crystal-to-single crystal transformations. *Crystal Growth & Design*, 14(9), 4602-4609.
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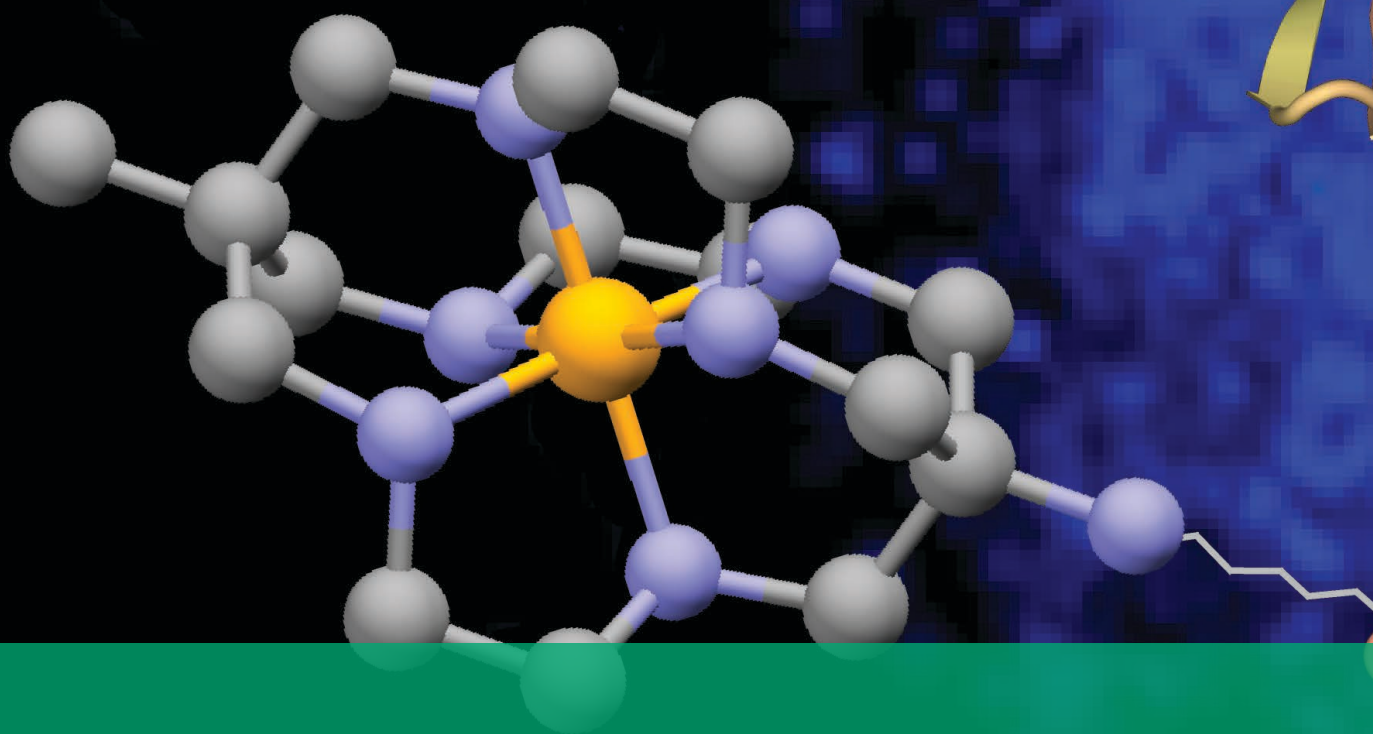
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Designed and printed: Design, Print and Merchandise, External Relations, University Services 2015

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