



THE UNIVERSITY OF
MELBOURNE

SCHOOL OF CHEMISTRY

Annual Report 2012

SCHOOL OF CHEMISTRY

Annual Report 2012

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FRONT COVER IMAGE

Materials prepared by Dehong Chen and Lu Cao within the School of Chemistry's Caruso research group. These mesoporous titania beads with spiky particles decorating the surface have been tested in dye-sensitised solar cell applications, in collaboration with Monash University, achieving over 10 % efficiency.

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INTRODUCTION FROM THE HEAD OF SCHOOL

Once again we present the Annual Report from the School of Chemistry and celebrate some of our many accomplishments in 2012. The School is one of the oldest and largest chemistry departments in Australia: lectures in chemistry have been given at the University of Melbourne since 1856. The reputation of the School continues to grow as evidenced by the outcomes of the 2012 QS World University Ranking for Chemistry. Despite the vagaries of the ranking systems, we were delighted that the University of Melbourne came in highest in Australia and at 20 in the world to study chemistry.

The School continues to perform strongly in research with successes in the Australian Research Council (ARC) grant schemes, including a Future Fellowship to Dr Georgina Such and Discovery Early Career Awards to Dr James Hutchison and Dr Chris Ritchie. The School also hosts the ARC Centre of Excellence for 'Free Radical Chemistry and Biotechnology' and is a participant in two other centres. The excellence of our researchers has been recognized in several ways, including the awarding of the Royal Medal to Laureate Professor Andrew Holmes in recognition of his outstanding career achievements. I was also honoured to be elected as the first female chemist to the Australian Academy of Science.

Meanwhile, major refurbishments of the Chemistry Building continue. The new physical chemistry research laboratories on Level 1 East were occupied in March 2012. The final research laboratories in the East Wing of the Chemistry Building, Level 2 East, are planned for completion in 2013. This will see the School with modern research laboratories located primarily in the East Wing and at the Bio21 Institute, together with the new teaching laboratories in the West Wing of the Chemistry Building.

Our outreach activities on campus and at schools throughout Victoria engage students at all levels. The Melbourne University Chemical Society hosted the Lady Masson Lecture by our new Provost, Professor Margaret Sheil, which was a highlight of our public lecture program.

Following a re-structure of Professional Staff in the Faculty of Science during 2012, we farewelled Marg Ross (School Manager) and Fran Dynan (Finance Manager) and thank them for their service to the School of Chemistry.

I invite you to read about our performance in teaching, research and engagement, which are briefly summarized in the following pages, and reinforce that the School of Chemistry is a great place to study and do research.



Professor Frances Separovic FAA



OUR PEOPLE

ACADEMIC

Head of School

Frances Separovic

Professors

Muthupandian Ashokkumar
Evan Bieske
Ken Ghiggino
Franz Grieser
Spas Dimitrov Kolev
Robert Lamb
Richard Alfred O'Hair
Mark Antony Rizzacasa
Carl Herbert Schiesser

Future Generation Fellows

Rachel Caruso
John Gehman

ARC Australian Postdoctoral Fellow

George Khairallah

ARC Australian Postdoctoral Fellows

Linda Feketeova
Elizabeth Krensky

Centenary Fellow

William 'Alex' Donald
Hadi Lioe



Associate Professors and/or Readers

Brendan Francis Abrahams
Rachel Caruso
Michelle Louise Gee
Craig Hutton
Trevor Alexander Smith
Jonathan Michael White
Uta Wille

Senior Lecturers

Stephen Peter Best
Colette Boskovic
Paul Donnelly
Spencer John Williams

Lecturers

Angus Anthony Gray-Weale
Alessandro Soncini

ARC Laureate Fellows and Professors

Paul Mulvaney

Laureate Professor

Andrew Bruce Holmes

Tutors

Penelope Commons
Sonia Horvat

Chemistry Outreach Fellow

Michael Moylan

Research Associates

Sneha Abraham
Abigail Albright
Klaus Boldt
Gojko Buncic
Nahid Chalyavi
Janage Chandrapala
Maryine Chee Kimling
Dehong Chen
James Cochrane
Christopher Dean Donner
Augustine Doronila
Viktoras Dryza
Alex Duan
Linda Feketeova
Maria Ines Gameiro SA Almeida
Catrin Goeschen
Christian Gunawan

Amber Hancock
Xiaotao Hao
Clare Henderson
James Hickey
Timothy Hudson
David John Jones
Yvonne Kavanagh
Shea Fern Lim
Anthony Morfa
Tich-Lam Nguyen
Adabelle Ong
Brett Paterson
Christopher Ritchie
Tatiana Pinedo Rivera
Marc Antoine Sani
Christine Schieber
Colin Skene
Andrew Tilley
Willem Van den Huevel
Phillip Van der Peet
Krista Vikse
Huabin Wang
Xingzhan Wei
Keith White
Christian Wichmann
Alex Wu
Zhiguang Xiao
Yanlin Zhang
Meifang Zhou

HONORARY APPOINTMENTS

Emeritus Professors

Donald William Cameron
Francis Patrick Larkins

Professorial Fellows

Robert Catrall
Roger Francis Martin
Ezio Rizzardo
Richard Robson
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
Charles Young
Senior Fellows
Robert Craig
Valda May McRae

Fellows

Richard David Harcourt
Akhter Hossain
John Lambert
Alessandro Martucci
Suzanne Reichman
Denis Scanlon
Gerard Wilson

PROFESSIONAL

West Precinct Manager

Eugene Fredericks

West Precinct Facilities Manager

Paul Beardsley

Renee Beale
Vicki Burley
Fran Dynan
Gregory Ellis
Robert Gable
Sue Hickey
Ross Lineham
Jenny Long
Brendan Mangan
Bryan McGowan
Alf Meilak
Elizabeth Mills
Peter Mills
Des Odgers
Charlie Penman
Lachlan Pollock
Marg Ross
(Business Manager)
Craig Sanders
Jennifer Scott
Alexandra Strich
Doug Taylor
Joe Tyler
Sioe See Volaric

NEWS

From time to time, School of Chemistry staff and students make the news! Below are excerpts from, and links to news stories and articles from 2012 about the School of Chemistry, from print and electronic media.

HOW VIRUSES PLAY BIOLOGICAL 'PIGGY-BACK'

An international team of scientists led by Assoc Prof Spencer Williams from the School of Chemistry and Bio21 Institute and Professor Gideon Davies from the University of York determined the structure of the enzyme endomannosidase, significantly advancing our understanding of how a group of devastating human viruses including HIV and hepatitis C hijack human enzymes to reproduce and cause disease. In work reported in the Proceedings of the National Academy of Sciences USA (PNAS) they studied bacterial endomannosidase as a model for the same human enzyme and successfully determined the 3D structure using state-of-the-art synchrotron technology. Knowing the enzyme structure revealed how viruses play biological 'piggy-back', borrowing our cellular machinery to replicate and cause disease. The findings were widely reported on ABC News and Radio, in the Herald Sun and in various online sources nationally and internationally

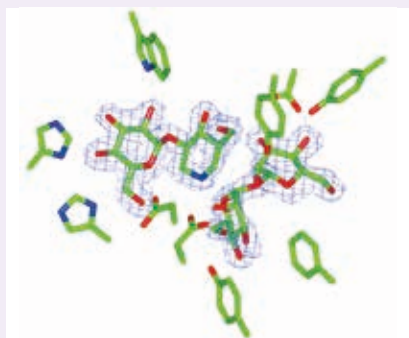


Image created by Spencer Williams:
"X-ray data showing a ternary complex of the inhibitor Glc-IFG and product mannobiose bound to endomannosidase".

PNAS ARTICLE FOR DONNELLY GROUP

Research from Paul Donnelly's Group in collaboration with Dr Peter Crouch from the Dept. of Pathology was published in PNAS. A copper complex under investigation as an imaging agent for the diagnosis of tumours is selectively trapped in cells with an impaired mitochondrial electron transport. Radioactive versions of the copper complex are used as radiopharmaceuticals for diagnosis of cancers using positron emission tomography (PET). Hypoxic tumours, ischemia, and Parkinson's disease all involve impaired mitochondrial function so there is potential this copper complex could be used as a PET imaging agent in other mitochondrial diseases.

BRANDON MACDONALD AWARDED STUDENT PRIZE AT ICONN 2012

PhD student, Brandon MacDonald, from the Mulvaney lab was awarded a prize at the 2012 International Conference on Nanoscience and Nanotechnology (ICONN 2012) in Perth in early February. Brandon MacDonald won a Best Poster Prizes for his work: "A Scalable, Non-Injection Synthesis of CdTe Nanocrystals for use in Solution-Processed Solar Cells".

CHEMICAL COMMUNICATIONS FRONT COVER FOR DONNELLY/WEDD GROUP

A paper by Gojko Buncic from Paul Donnelly's and Anthony Wedd's research groups featured on the front cover of Chemical Communications. The paper describes the isolation and characterization of a Cu(II) complex of a non-innocent quadridentate ligand, where the ligand is a pi-radical anion.

LINDA CHAN AWARDED NH SCHUSTER SCHOLARSHIP

C Linda Chan, PhD student with Prof John Wade and Prof Frances Separovic, was awarded the 2012 Norma Hilda Schuster (nee Swift) Scholarship. The scholarship is awarded for academic merit to a student enrolled in the Faculty of Science undertaking graduate research in the field of biochemistry.

VICTORIA-INDIA DOCTORAL SCHOLARSHIP TO CHEMISTRY PHD STUDENT

Sayali Shah was the successful Uni Melb PhD applicant for the Victoria India Doctoral Scholarship as Sayali completed a Masters from University of Pune and her supervisor here will be Spencer Williams.

UNIVERSITY LAB OPENED TO VCE CHEMISTRY STUDENTS

The School of Chemistry hosted 1,100 VCE Chemistry students from regional areas for 'A Scientific Entrée', a new University program which focuses on food and agriculture.



FROGS THWART HOSPITAL SUPERBUGS

Research on antimicrobial peptides at the School of Chemistry featured in the Sydney Morning Herald. The article "Hospital hero? This frog has the makings of a lifesaver" featured research leader Professor Frances Separovic.

ZALIHE HAKKI ATTENDS 2012 HOPE CONFERENCE IN TSUKUBA, JAPAN

Zalihe Hakki, a PhD student in the Williams research group, attended the 4th HOPE in Tsukuba, Japan. This prestigious meeting, hosted by the Japan Society for the Promotion of Science, aims to foster talented young researchers in the Asia-Pacific region in the Science & Technology disciplines. The meeting was attended by ~ 100 students from 17 countries who were involved in presentations by 9 Nobel Laureates and other eminent researchers working on the leading edge of science from around the world. The week culminated in presentations by groups of students. The presentation by Zalihe's group on the IgNobel Prize was judged the winner.



Photo: Zalihe meeting Nobel Laureates Daniel Schechtman (Chemistry 2011) and Makoto Kobayashi (Physics 2008).

MIEGUNYAH LECTURE SUCCESS

Over 200 people attended the Miegunyah Lecture by Prof J Ruzicka entitled 'Analytical chemistry and its invisible presence in our everyday life' held in the Masson Theatre in March.



CHEMISTRY ALUMNI AWARDED PRESTIGIOUS VESKI FELLOWSHIPS

Two of our alumni, Dr Seth Masters (Hons with Prof. Tony Wedd) and Assoc. Prof. Tiffany Walsh (Hons with Prof. Frank Larkins), were awarded VESKI Fellowships. Seth is working at the Walter & Eliza Hall Institute and Tiffany is at Deakin University.

CONGRATULATIONS TO NEWLY ELECTED FELLOW OF THE AUSTRALIAN ACADEMY OF SCIENCE - PROFESSOR FRANCES SEPAROVIC



Professor Frances Separovic was admitted as a new Fellow to the Australian Academy of Science AAS). Frances is recognised for her work in "Using solid-state nuclear magnetic resonance to advance understanding of how peptides get into membranes, with applications for antibiotics and Alzheimer's disease". The prestigious award is one of the country's highest honours recognising a career that significantly contributes to the world's scientific knowledge. Representing Australia's leading research scientists, the AAS annually honours a small number of Australian scientists for their outstanding contributions to science, by election to the Academy. The new Fellows hail from institutions around Australia and have made internationally significant achievements in a broad range of scientific disciplines. The new Fellows were admitted to the Australian Academy of Science on 2 May in Canberra.

INTERNATIONAL FUNDING FOR PRINTED SOLAR CELLS

VICOSC researchers, Wallace Wong and David Jones, have been awarded funding as part of the Australian Solar Institute (ASI) Australia-Germany Collaborative Solar R&D fund for their project "Enhancing efficiencies in printed solar cells by controlling morphology development". They received ASI contribution: \$500,000; Total project value: \$1,213,235 Partners: Light Technology Institute and Laboratory for Electron Microscopy at Karlsruhe Institute of Technology.

2011 PRIZES

The School of Chemistry congratulates the following students who were awarded prizes based on their 2011 results.

- Dwight Prize - Yi Lin Kang
- Exhibition Prize - Rama Lokon
- Charles Anthony Taylor Prize - Stephanie Kusumo
- Huntsman Australia Prize - Samuel Tucker
- Dulux Prize - Edward Nagul
- J. S. Anderson Prize - Kenichi Nakanishi
- James Cuming Major Prize - Merinda Healey
- James Cuming Minor Prize - Matthew Lovell
- Fredrick Walker Prize - Kenichi Nakanishi
- Kernot and Stanley Harvey Prizes - Jessica Holmes
- Dixon Research Scholarship - Matthew Burton
- Ronald Riseborough Prize - Sarah Jaber
- Monica Reum Prize - Phillip van der Peet

AUSTRALIAN LEADERSHIP AWARD TO RACHEL CARUSO

Assoc Prof Rachel Caruso was selected as a recipient of a 2012 Australian Leadership Award. The Award recognizes Rachel's leadership in her field and was presented on 14 May at the ADC Future Summit.

DEAN'S AWARD FOR EXCELLENCE IN RESEARCH TO PAUL DONNELLY

The School congratulates Dr Paul Donnelly who was awarded the 2012 Dean's Award in recognition of his excellence in research.

HEALY TRAVEL AWARD TO STEFANIE ALEXANDER

Stefanie-Ann Alexander was selected as the 2012 recipient of the TW Healy Travel Award.

GRIMWADE PRIZE TO ROB LAMB

Congratulations to Professor Rob Lamb who was awarded the 2011 Grimwade Prize in Industrial Chemistry.

INSPIRING AUSTRALIA GRANT

Dr Renee Beale was awarded an 'Inspiring Australia' grant from the Australian Government to run a program called Insight Radical. Rene's project partners, Winsor & Newton, are also providing generous support. Insight Radical aims to create dialogue in the broader community about free radicals and their impact, both positive and negative, on health, materials and the environment. This will be achieved by:

- Hosting artists in the Free Radical Centre laboratories and holding public exhibitions in Melbourne, Sydney and London of artwork,
- Presenting science art workshops for members of the public in regional areas,
- Presenting a science art program for the Broken Hill community, and
- Working with Indigenous communities in the Northern Territory.



Renee Beale presenting at an Insight Radical science/art workshop in Cairns.

ARC LINKAGE GRANT TO SPAS KOLEV

Prof Spas Kolev was awarded an ARC Linkage grant in the recent round for the project, "The pollution potential of mercury in legacy biosolids and possibilities for its minimisation by phytoremediation and phytostabilisation approaches", together with the Melbourne Water Corporation, Southern Illinois University Carbondale, University of the Balearic Islands, and Victorian Environmental Protection Authority.

STUDENT PRIZE FOR Y CHO

PhD student, Youngsoo Cho, from the Kolev lab received an award for 'outstanding poster presentation' at the 7th Aseanian Membrane Society Conference (Busan, South Korea, July 4-6). Congratulations Youngsoo.

MATERIALS OF LIFE SYMPOSIUM, 29 JUNE 2012

The School co-sponsored the Symposium held at the Melbourne Brain Centre Auditorium, Neurosciences Bldg, The University of Melbourne. The plenary speaker was Professor Liz Blackburn, 2009 Nobel Prize in Physiology or Medicine with talks from: Rachel Caruso, Matt Dixon and Justine Mintern (University of Melbourne) and John Sedat (University of California San Francisco).

AUSTRALIAN WORKSHOP FOR CHEMICAL BIOLOGY, 29 JUNE 2012

The School of Chemistry and Bio21 were proud to host the Australian Workshop for Chemical Biology at the Bio21 Institute Lecture Theatre on 29 June. The workshop featured keynote presentations from speakers around Australia, including Profs David Fairlie and Jenny Martin (University of Queensland), Prof Dale Godfrey (University of Melbourne) and Dr Chris Burns (WEHI), as well as the international plenary speaker, Prof Peter Wipf (University of Pittsburg). The day concluded by joining with the Material of Life Symposium to hear a plenary lecture from Prof Liz Blackburn (2009 Nobel Prize in Physiology or Medicine). The Workshop was enabled through funding from the Office of the Deputy Vice Chancellor (Research).

INTERNATIONAL CHEMISTRY CONFERENCE: 1-6 JULY 2012

Professor Mark Rizzacasa from the School was a key organiser of the 19th International Conference on Organic Synthesis (ICOS). Over 550 leading organic chemists and researchers from 33 different countries were in Melbourne for ICOS 2012. Speakers included Nobel Laureate Professor Ei-ichi Negishi, Purdue University; Professor Amos B Smith III, University of Pennsylvania, and Editor-in-Chief of the American Chemical Society journal, Organic Letters; Professor Margaret Brimble, L'Oreal-UNESCO Women in Science Laureate 2007; and Professor Minoru Isobe, Tsing Hua University, Taiwan, recipient of the Purple Ribbon Medal of the Emperor of Japan. ICOS 2012 was organised by the Royal Australian Chemical Institute (RACI) and the International Union of Pure and Applied Chemistry (IUPAC).



Image: Professors Andrew Holmes, Mark Rizzacasa (UoM), Amos Smith and Jenny Holmes at the ICOS19 mixer.

YOUNG INVESTIGATOR AWARD FOR PAUL DONNELLY

Dr Paul Donnelly received a Young Investigator Award at the recent Gordon Research Conferences on Metals In Medicine in Andover, NH, USA. Paul received the honour in recognition of his contributions to research in metals in medicine and presented a talk titled "Metal Complexes for the Diagnosis of Alzheimer's disease and Cancer".

HUTTON GROUP POSTER PRIZE

Aaron Brown (PhD student in the Hutton group) won an RACI Feutrill poster prize at the 19th International Conference on Organic Synthesis/24th RACI Organic Conference held in Melbourne.

CONGRATULATIONS TO PROF ANDREW HOLMES ON AWARD OF 2012 ROYAL MEDAL



Professor Andrew Holmes was awarded a 2012 Royal Medal from the Royal Society, London. Three Royal Medals, also known as the Queen's Medals, are awarded annually for the most important contributions in the physical, biological and applied or interdisciplinary sciences. Former recipients include Charles Darwin, Francis Crick and Suzanne Cory. Andrew is a University of Melbourne Laureate Professor of Chemistry at the Bio21 Institute, a CSIRO Fellow and a Distinguished Research Fellow at Imperial College London. He is recognised for his contributions at the interface of the materials and

biological sciences that will lead to outcomes that will benefit society. He played a pioneering role in the field of applied organic electronic materials. In the late 1980's he established a collaboration with University of Cambridge physicists that in 1990 led to the discovery of light emitting polymers and led the chemistry team in that collaboration for 14 years. These polymers have applications in solid state (LED) lighting, flat panel displays, transistors and solar cells. In Australia Professor Holmes leads the Victorian Organic Solar Cells Consortium involving the University of Melbourne, CSIRO, Monash University and industry partners.

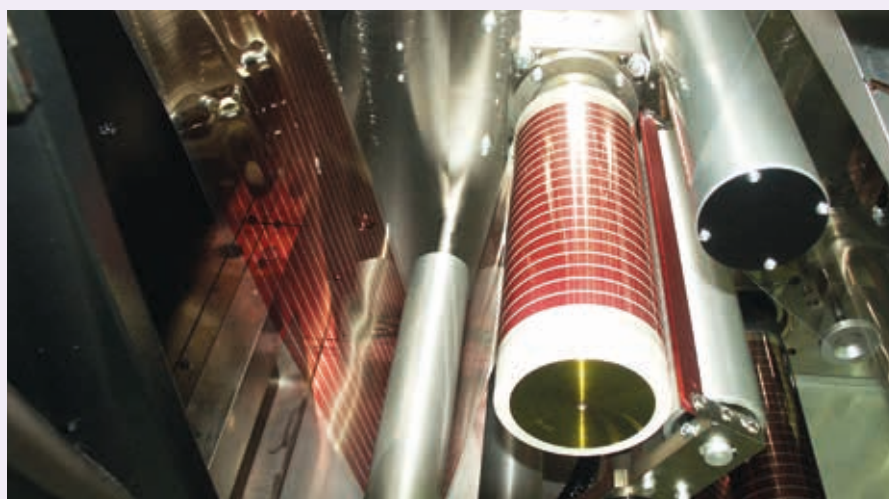


Photo Credit: Dr Noel Clark.

VICOSC new micro-Coater printer with a 30 cm web: Printing the active layer of an organic solar cell.

LINDA CHAN WINS RACI STUDENT TRAVEL AWARD

Congratulations to Linda Chan received an RACI Postgraduate Student award for travel to the 2012 Relaxin conference in Florence.

ARC FUTURE FELLOWSHIPS AWARDED TO CHEMISTRY

The School of Chemistry congratulates Dr Georgina Such and Dr Elizabeth Krenske who recently were awarded ARC Future Fellowships. Georgina is an alumni of the School and we look forward to her joining us again in 2013. Her project is entitled 'Advanced bio-inspired polymer assembly: tools for diagnostics, imaging and therapies'. This project will involve the synthesis and application of 'smart' polymer films and particles, which mimic biological behaviour. Smart polymeric materials have the potential to make a significant impact in areas such as healthcare but to do this effectively the materials will need to respond intelligently to biological signals. Elizabeth's project, 'Theoretical modelling and design of safe covalent anti-cancer drugs', will be carried out at the University of Queensland.

CHEMISTRY IN TOP 20 QS WORLD RANKING

The 2012 QS World University Ranking for Chemistry lists the best universities in the world to study chemistry. University of Melbourne comes in highest in Australia and at 20 in the world.

STAFF ENGAGEMENT EXCELLENCE AWARD TO MICK MOYLAN

Mick Moylan was awarded a Staff Engagement Excellence Award for his outreach activities with Chemistry in Schools on 28 Sep. Well done Mick!

RECOLLECTIONS OF A SCIENTIST, VOLUME 1

One of our alumni published a book about his youth in Melbourne and studying chemistry here. Prof Norman Greenwood FRS has been writing his memoirs and the first volume, dealing with his boyhood and youth in Australia (1925-48) is out. There are full descriptions of school and university life in Melbourne at that time and of the six members of academic staff of the School, who carried all the teaching load. Also of the CSIR(O) laboratory in which he worked as a technician in the 'new' Chemistry Building during the war.

SELBY RESEARCH AWARD TO ANGUS GRAY-WEALE

Congratulations to Dr Angus Gray-Weale who received the Selby Research Award this year. The purpose of the award is to assist an outstanding academic to establish his or her research career in Chemistry or related disciplines, within five years of their first appointment at The University of Melbourne.

INTERVIEW WITH PROFESSOR ANDREW HOLMES ON ABC RADIO

Prof Andrew Holmes was on the Midday Interview on Wed 8 Aug with Margaret Throsby on ABC Classic FM. Andrew is University Laureate Professor of Chemistry and Bio21 Institute at the University of Melbourne, CSIRO Fellow and Distinguished Research Fellow in the Department of Chemistry (Imperial College). He is a pioneer of research in organic electronics.

LADY MASSON MEMORIAL LECTURE DELIVERED BY PROVOST

The 2012 Lady Masson Lecture was given by Professor Margaret Sheil, Provost, University of Melbourne. The lecture, entitled "What we can learn from Thomson, Heisenberg and Florey in framing research and innovation policy," was held on Wed 8 Aug in the historic Masson Theatre to a diverse audience.

MUCS LIFE MEMBERSHIP TO DR VALDA MCRAE

Prior to the Lady Masson Memorial lecture on Wed 8 August, Dr Valda McRae was presented with a Life Membership certificate of the Melbourne University Chemical Society (MUCS) by the current president, Prof. Evan Bieske, in recognition of her valuable service to MUCS. We all greatly appreciate Valda's great contribution to Chemistry at Melbourne.

PUBLICATION IN CHEMICAL SCIENCE FOR PAUL DONNELLY'S GROUP

Collaborative work from the groups of Paul Donnelly, Tony Wedd and Anthony White (Pathology) has been published in *Chemical Science*, a new journal for findings of exceptional significance published by the Royal Society of Chemistry. The research highlights that the chemical complexity of living cells can have a diverse effect on the action of molecular probes designed to detect specific intracellular pools of copper. Copper is an essential bio-metal involved in critical cell functions and the progression of neurodegenerative diseases but the mechanisms controlling its sub-cellular localization during health and disease remain poorly understood.

CHEMISTRY IN TOP 20 QS WORLD RANKING

The 2012 QS World University Ranking for Chemistry lists the best universities in the world to study chemistry. University of Melbourne came in highest in Australia and at 20 in the world.

PUBLICATION IN PNAS FOR ANTHONY WEDD

Cheap catalysts for the photo-oxidation of water are highly desirable for potential application in artificial photosynthetic systems. This work showed that the simplest polyoxometalate anions are robust catalysts in the presence of ionic liquids (liquid salts), or at the interface between aqueous and ionic liquid phases. It appears that the photo-active anion provides one activated water molecule (as an oxide ligand) and the ionic liquid provides another (by disrupting the hydrogen bonding network of bulk water). This allows efficient formation of dioxygen from the oxidation of two water molecules.

PHD STUDENT JULIA BALDAUF WINS VICTORIAN YOUNG NANOTECHNOLOGY AMBASSADOR AWARD

PhD student Julia Baldauf of the Mulvaney Group won the Victorian Young Nanotechnology Ambassador Award given by the Australian Nanotechnology Network for her enthusiastic involvement in promoting science and science education. Julia has been actively engaged in outreach activities including visits to metropolitan and regional schools to inspire students about nanotechnology and more broadly science education.

STUDENT PRIZE AT IOESC12 AWARDED TO JESSE ROTH-BARTON

Jesse Roth-Barton, a PhD student with the White & Ghigginio labs, was awarded a best poster prize at the International Organic Excitonic Solar Cell Conference (IOESC: 12) that was held at Coolumb QLD, Sep 2012. Jesse's presentation was entitled "Diketoporphyrinopyrroles for solar cells: synthesis and performance".

FEUTRILL AWARDS

Congratulations to the following students who received Feutrill awards to participate in an international conference related to organic chemistry: Jenny Chambers (Rizzacasa); Linda Chan (Separovic); Luke Gamon (Wille); Emma Read (Wille); and Mark Richardson (Williams).

OPEN DAY AT CHEMISTRY

Sunday 19th August was the University of Melbourne Open Day. Staff from the School of Chemistry answered queries about course advice and careers throughout the day. The guided tours of the School of Chemistry's facilities were very popular. Over 900 people were taken on the tour that included a demonstration of interactive technology used in tutorials in the Learning Lab, visits to the Learning Centre and Labyrinth and the historic Masson Theatre, and research displays in the Level 1 undergraduate teaching laboratory.



Image Courtesy Alex Strich. Post Doc Klaus Boldt and Fabio Lisi, PhD student to the Mulvaney Lab with Open Day visitors in Lab.

JOURNAL COVER FOR CARUSO GROUP

Materials prepared by Dehong Chen and Lu Cao of the Caruso group have been displayed on the cover of *Chemistry - A European Journal*. These mesoporous TiO₂ beads with spiky particles decorating the surface have been tested in dye-sensitized solar cell applications, in collaboration with Monash University, achieving over 10% efficiency.

FRANCES SEPAROVIC ELECTED ISMAR FELLOW

Professor Frances Separovic was elected Fellow of the International Society of Magnetic Resonance (ISMAR) to honour her 'as a leader in NMR studies of membrane structure and biophysics, mostly using solid-state NMR'.

NATURE PUBLICATION FOR O'HAIR & KHAIRALLAH

An Australian research team has discovered how specialised immune cells recognise products of vitamin B synthesis that are unique to bacteria and yeast, triggering the body to fight infection. The work has recently been published in *Nature* and the co-authors include Professor Richard O'Hair and Dr George Khairallah from the School of Chemistry. See the following news items:

- Researchers discover how the body uses vitamin B to recognise bacterial infection
- How the Body Uses Vitamin B to Recognize Bacterial Infection
- How the Body Uses Vitamin B to Recognize Bacterial Infection

CHEMISTRY STUDENT IN CHEMISTRY WORLD FINALS IN LONDON

Congratulations to James Banal, a BSc (Hons) student this year in the Wong and Ghiggino groups, who attended the award ceremony in London for the Chemistry World Science Communication Competition 2012. James' article 'Diagnostics on paper' was one of the finalists for this worldwide competition.

INSIGHT RADICAL: WHERE SCIENCE MEETS ART BLOG

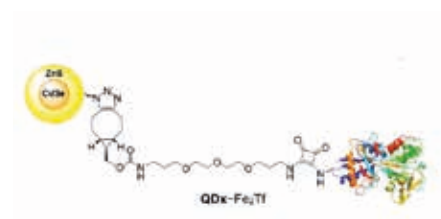


Photo Courtesy: Renee Beale. Artist Peter Sharp with Centre Scientist Yvonne Kavanagh.

Follow the journey of 6 artists and 9 scientists through a project called Insight Radical: where science meets art. In Insight Radical, artists and scientists come together at the intersection of art and science to consider the impact of free radicals on health, the environment and on the longevity of artwork. The Insight Radical blog was established in August 2012 to document current developments in the program until its completion in December 2013. The regularly updated blog includes stories, images and video arising from artist residencies in the Free Radical Centre laboratories and artists' studio visits, as well as images of artwork produced as a consequence of the residencies, reactions to the project from scientists and artists, and details of upcoming public art/science workshops and exhibitions relating to the program. Visit the Insight Radical blog at: <http://www.insightradical.org> Insight Radical is proudly supported by the ARC Centre of Excellence for Free Radical Chemistry & Biotechnology (School of Chemistry, University of Melbourne), Winsor and Newton, Artist Profile magazine, and the Commonwealth Government through an Inspiring Australia grant.

ANGEWANDTE CHEMIE PUBLICATION FOR MULVANEY, DONNELLY AND WILLIAMS GROUPS

A multidisciplinary collaboration involving the Nanoscience (Mulvaney), Donnelly and Williams laboratories, as well as colleagues in the Biochemistry and Pathology Department, has been published in *Angew. Chem. Int. Ed.* (2012, 51:10523). The work reports a novel and widely applicable conjugation strategy that allows the controlled attachment of highly-fluorescent quantum dots to a variety of biological targets, ranging from proteins to antibodies, peptides and DNA. The utility and success of the conjugation platform was demonstrated through labelling of the iron-carrier protein transferrin, enabling the tracking of its cellular uptake and distribution within the cell.



ANGEWANDTE CHEMIE COVER FOR WILLIAMS GROUP

A multidisciplinary study utilizing synthetic chemistry, protein crystallography, and computational studies involving Dr Zoran Dinev from the Williams group has been featured on the cover of *Angewandte Chemie*. The study reports how a mannosidase enzyme restricts the conformational space of its substrate, a mannose sugar, upon binding.

ECR GRANT TO CHRIS RITCHIE

Dr Chris Ritchie was awarded an Early Career Research grant for his project, "Design and Development of Organic-Polyoxometalate Based Photo-Switchable Devices".

ROUND 2 HEALY AWARDS ANNOUNCED

Alessandra Bestelli and Robert Elliott who were joint winners of the round 2 Healy Travel Award, 2012. Alessandra will travel to London in November 2012 to attend the International Conference on Nanotechnology in Medicine "NanoMED", and Robert will attend the International Symposium on Macrocyclic and Supramolecular Chemistry 8 in Crystal City, Virginia in July 2013.

PHD STUDENT BIOPHYSICS AWARD

Matthew Burton received an Australian Society for Biophysics award for his poster 'Probing slow interaction dynamics of a model lytic peptide with giant unilamellar vesicles' presented at the Fluoro 2012 workshop. Matthew is a PhD student with the Gee Soft Condensed Matter Group.

MCKENZIE FELLOWSHIPS

The School is delighted to be hosting two McKenzie Fellows in 2103: Dr Marco Lista from the Mulvaney lab and Dr Willem van der Heuvel from the Soncini group, who were both successful this year.

NATIONAL GRANT AWARDS

Congratulations to the following members of the School who were successful in the latest round of ARC and NHMRC grant awards: Alex Donald, James Hutchison and Chris Ritchie are DECRA recipients; Paul Mulvaney, Carl Schiesser, Tony Wedd and Spencer Williams received Discovery grants; Frances Separovic is a co-CI on an NHMRC grant; and Bieske, Smith & Ghiggino are co-CIs on a LIEF grant with Adelaide and Wille & Wedd are co-CIs on a LIEF grant with MDHS.

CHEMISTRY GRADUATES RECEIVE TALL POPPY AWARDS

Two of our graduates have been awarded Victorian 2012 Young Tall Poppy Science Awards:

1. Dr Colin Scholes (Chemical & Biomolecular Engineering), who is developing efficient filtering membranes to separate carbon from industry gases such as coal-fired power stations.
2. Dr Georgina Such (Chemical & Biomolecular Engineering), who is investigating better ways to deliver chemotherapy drugs by designing a smart capsule that is specially designed to protect the body from the drug until it reaches the specific cancer site. Georgina will take up a Future fellowship in the School in 2013.

GO8 AUSTRALIA-GERMANY RESEARCH COOPERATION AWARD

Assoc Prof Uta Wille's application, 'Radical intermediates in photocatalysis with Visible Light', was successful in obtaining funding from the Group of Eight Australia-Germany Joint Research Co-operation Scheme.

QUANTUM STEP TOWARDS ON-THE-SPOT HENDRA VIRUS DETECTION

CSIRO scientists, in collaboration with Chemistry researchers at the Bio21 Institute at the University of Melbourne, have developed a new method which could pave the way for a portable Hendra virus biosensor. <http://www.csiro.au/Portals/Media/HENDRA-Virus-Detection.aspx>

RADICALS IN THE GALLERY AND NATURE'S ART VANDALS

Professor Carl Schiesser and art conservator, Caroline Kyi, discussed how understanding the effect of free radicals on pigment helps art galleries and museums preserve important works of art. Podcast presented by Dr Shane Huntington, "Radicals in the gallery: scientists contend with Nature's art vandals" <http://upclose.unimelb.edu.au/episode/224-radicals-gallery-scientists-contend-nature-s-art-vandals> "Some artists believe that the degradation process is part of the artwork and, therefore, the fact that the painting decays or changes colour is actually not detrimental in the eyes of the artist. You know the question depends upon the work of art that the artist intended." - Prof Carl Schiesser

US-AUSTRALIA INSTITUTE FOR ADVANCED PHOTOVOLTAICS

The Australian Solar Institute announced major research grants to support solar energy research. Congratulations to the organic photovoltaic researchers in the School of Chemistry (Andrew Holmes, David Jones, Ken Ghiggino) who will form a node of the new \$33 million US-Australia Institute for Advanced Photovoltaics. This Institute's objective is to develop the next generation of photovoltaic technology and involves participation from key research groups in USA and Australia Universities, research organisations together with industrial supporters.

NANOTECH NETWORK YOUNG SCIENTIST AMBASSADOR

Julia Baldauf, Postgrad student with the Mulvaney lab visited schools in Victoria including two regional schools to help inspire students about nanotechnology and science more broadly. As part of her Ambassador role, Julia has visited four schools to talk about science, provide a short presentation on nanotech and its applications, and engage the students in some hands-on activities such as a spring that remembers its shape, magic sand and seeing different colours of nanocrystals.

ID SEED GRANTS FOR 2013

Interdisciplinary SEED grants were awarded to:

- Dr Abigail Albright and Jonathon White (Chemistry), U Ackermann (Austin Health) and D Howell (Florey) for 'Development, synthesis, in vitro and in vivo evaluation of novel radiotracers for PET imaging of ischemic Stroke'
- Prof Richard O'Hair (Chemistry), J Ziogas, C Wright and N Cranswick (Pharmacology), D Walker, A Tordesillas and M Small (Maths & Stats) for 'Small Needles, Big Haystacks, and a Smart Comb: Integrating Network Theory and Mass Spectrometry to Improve Pharmaceutical Development'
- Dr Craig Hutton, J Cottram (Chemistry), K Barnham (Neuroscience) for 'Towards a diagnostic agent for Alzheimer's disease; detection of neurotoxic amyloid peptides'

RACI INORGANIC CHEMISTRY GROUP (VIC) SYMPOSIUM

The School hosted the symposium again this year. The plenary lecture was given by Graham Ball (UNSW) who talked about multi-nuclear NMR spectroscopy and its use in characterising metal-alkane complexes. There were nine student talks from a mixture of students from RMIT, Monash, La Trobe and UoM. The prize for best talk of the day went to Lea Fohlmeister (Monash); best poster prizes were awarded to Lachlan McInnes (UoM), Sarah Laird (La Trobe) and Jamie Hicks (Monash). The prize for the best question went to Peter Hall (a second year undergraduate student from UoM).



Photo courtesy Lachlan McInnes: Left Prof Anthony Wedd (President Inorganic Chemistry Group RACI Victorian Branch) and Dr Graham Ball (Plenary speaker from University of NSW).

RESEARCH SCHOLARSHIP TO PHD STUDENT

Adlin Ramdzan, PhD student in the Kolev Group, was awarded the Dr Pamela Todd Research Scholarship from St Hilda College. The Scholarship is awarded to a resident member of the Senior Common Room who demonstrates outstanding merit and promise in his or her scholarly discipline. The Scholarship is awarded annually by the Council on the recommendation of the Scholarship Committee.

STUDENT PRIZE AT ANALYTICAL & ENVIRONMENTAL CHEMISTRY MEETING

Edward Nagul from the Kolev Group was awarded a student prize for his oral presentation at the 20th RACI Research and Development Topics Conference in Analytical and Environmental Chemistry (December, Geelong). Eddie completed his MSc in 2012 and starts his PhD in January next year.

MICK MOYLAN COMMENTS ON HELIUM SHORTAGE

Mick Moylan from the School of Chemistry was interviewed on Channel 10 "The Project" regarding the helium shortage on Wed 19 Dec.

NEW ULTRA-COMPACT NMR FOR CHEMISTRY TEACHING LABS

A high resolution benchtop NMR spectrometer has been purchased for teaching our undergraduate chemistry students. The bright red 43 MHz Magritek UCS is located in the Level 3 teaching lab and was commissioned on 24 January 2013. The ultra compact NMR spectrometer manufactured by Magritek Ltd, New Zealand, was purchased through Wilsmore and teaching support funding and will be trialled by our 3rd year CHEM30015 students this semester.

EMBO TRAVELLING FELLOWSHIP TO PHD STUDENT

Zalihe Hakki, PhD student in the Williams' research group has been awarded a prestigious travelling fellowship from the European Molecular Biology Organization. The fellowship will support travel expenses and living costs for Zalihe to visit the laboratory of Prof Gideon Davies at York University, United Kingdom and extend her studies into the carbohydrate processing enzyme, endomannosidase.

ASI POSTDOCTORAL FELLOWSHIP TO VIK DRYZA

Dr Viktoras Dryza has been awarded a postdoctoral fellowship from the Australian Solar Institute. His research project, entitled 'Guiding the rational design of organic dye sensitizers for solar cell technologies', aims to isolate organic dye molecules in the gas phase and investigate their spectroscopy and photophysics using advanced laser-based techniques.

MCKELVIE – NEW EDITOR OF TALANTA

Assoc. Prof. Ian McElvie has been appointed as an editor of the analytical chemistry journal, Talanta.

CHEMISTRY TEXTBOOK CO-WRITTEN BY UTA WILLE NOW IN CHINESE

The market leading first year textbook "Chemistry", which was co-authored by Assoc Prof Uta Wille (Publisher Wiley Australia), has been translated into Chinese and published through Wiley Asia. It is certainly not as glossy and colourful as the English version, but good to see that Australian-made teaching material is going onto the international market.

SOCIETIES

CHEMISTRY POSTGRADUATE SOCIETY

President: Brian Adamson

Vice President: Melina Glasson

Secretary: Alessandra Bestetti

Treasurer: Nicholas Kirkwood

General Committee members:

Chris Kingsbury, Luke Gamon, Sarah Jaber, Jessica Holmes, Matt Greer, Sean Collins, Gautam Jain and Rob Johnston.

PRESIDENT'S REPORT

In 2012 the CPS continued in its role of providing the School of Chemistry with a social forum, to complement the academic functions of the department. To this end CPS held social drinks on the first Friday of most months. In a similar pattern to 2011, these were well attended early on, but attendance slumped later in the year.

With regard to other social events, the 2011 trivia night was a hard act to follow (with a record number of attendees). In 2012 numbers were reduced but the night was still a success and similarly the 2012 CPS Dinner was a smaller affair compared to the previous year. This is possibly due to the timing, being held during the exam period (when many people were busy with marking). Finally, however, the Cup Day BBQ was very well attended and considered a success.

In 2012 the CPS once again participated in organizing a "Career Panel Discussion" (in conjunction with BAMBI and Bio21). Unlike 2011, the panel participants were not long into established careers but instead were recent graduates just starting out, which together with improved publicity may have contributed to the better attendance.

There are plans to hold the usual 'Welcome Back BBQ', as well as a repeat of the popular Inter-Building Frisbee Challenge and it is anticipated that these events will go ahead under the new committee, to whom we wish all the best.



2012 CPS Frisbee Challenge

MELBOURNE UNIVERSITY CHEMICAL SOCIETY (MUCS)

Program of Events for 2012

President: Prof Evan Bieske

Secretary: Dr Paul Donnelly

Treasurer: Dr Elizabeth Krenske

Student Representatives: Brian Adamson, Daniel Weber, Tom Whitwell, Julian Sanelli, Neville Coughlan.

February 1st

Professor Helmut Schwarz, President of the Alexander von Humboldt Foundation

Chemistry with methane: concepts rather than recipe

March 7th

Professor Darryl Bornhop, Vanderbilt University

A Universal Molecular Interaction Platform Based on Back-scattering Interferometry

April 4th

Dr Niels Bassler, Aarhus University
Annihilating Cancer with Antimatter - Science Fiction or Future to Come?

May 9th

Dr Susan Rempe Sandia National Laboratory

Ion Discrimination by Nanoscale Design

June 6th

Dr Andi Horvath, Museum Victoria
Mixing molecules and messages and making it exothermic - Science Communication Today

August 8th

Professor Margaret Sheil, Provost, University of Melbourne

What can we learn from Thomson, Heisenberg and Florey in framing research and innovation policy.

* Dr Valda McRae awarded Life Membership of MUCS at 29th Lady Masson Memorial Lecture on 8 August 2012.

September 12th

Professor Robert Continetti, Wilshire Fellow, University of California San Diego

Photodetachment of Molecular Anions

October 3rd

Professor Annie Powell, Wilshire Fellow, Karlsruhe Institute of Technology

Coordination chemistry - the next generation

October 24th

Professor Richard Robson, University of Melbourne Stranks Lecture.

Pre-organised molecular systems: exploratory studies spanning almost half a century at the Melbourne Chemistry School

November 14th

Dr Chris Burns, Walter and Eliza Hall Institute of Medical Research Feutrill Lecture.

The long crooked path of drug discovery: Lessons from the discovery and development of the kinase inhibitor, Momelotinib

December 12th

AGM & President's lecture

CHEMISTRY BUILDING REDEVELOPMENT

The School has been undergoing a major refurbishment program since 2008. This has included the development of new teaching laboratories on the 3 levels of the Chemistry West building, multipurpose teaching and student spaces on the ground level of Chemistry West and new research laboratories on each level of the Chemistry East Wing. Substantial new plant and services infrastructure has been put in place to support the new research and teaching spaces. Some \$40 million dollars has been spent to date on these building works.

During 2012 the building works continued although at a slower pace as funding and planning processes permitted. The East Wing, Level 1 research laboratories for the Ashokkumar, Caruso and Grieser groups were completed during the year and occupied in March. Plans were also finalised for the remaining Level 2 research laboratories for the Kolev, Gee, Mulvaney and Best groups. This floor will include a large instrumentation laboratory for accommodating a range of spectroscopic and analytical equipment for use by researchers in the School. We expect funding to be approved and the laboratory to be completed during 2013. Late in the year some funding was provided for minor refurbishment of the Masson Lecture Theatre to allow it to meet comfort and EH&S requirements. These updates will be completed over the summer break and include cushion seating, handrails, painting and limitations to the seating capacity of the Theatre. The 'heritage' aspects and atmosphere of the Theatre have been retained.

This will leave the redevelopment of office areas, other lecture theatres and general usage spaces to be completed in the final stages of the project. To ensure the Chemistry building continues to provide functional modern facilities for teaching and research, a Master Plan for the Chemistry building has been commissioned by Property and Campus Services and this will guide future usage and development plans.

Ken Ghiggino
(Chair, Chemistry Building
Working Group)



Images courtesy of SKM: Completed level 1 research laboratories.

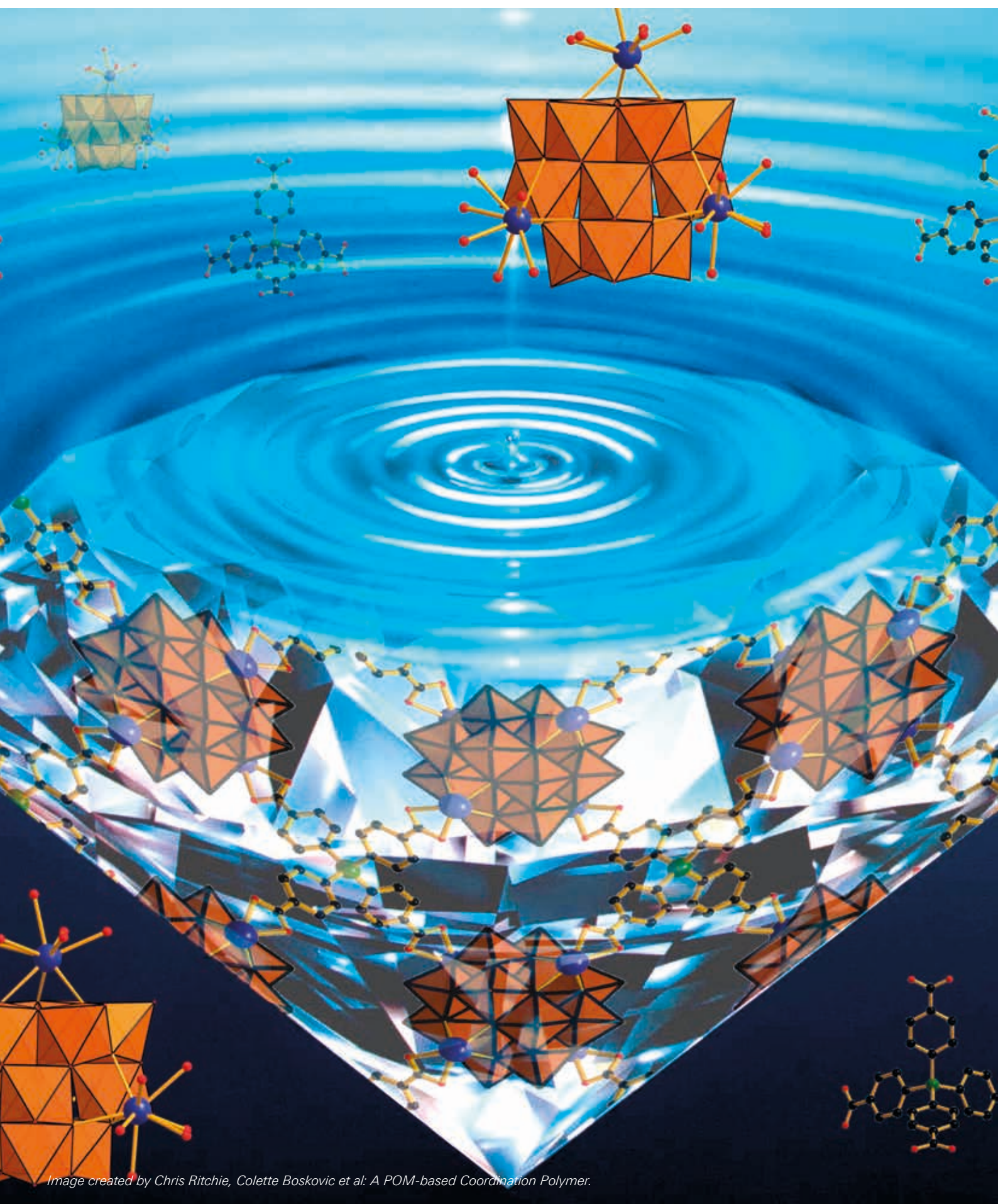


Image created by Chris Ritchie, Colette Boskovic et al: A POM-based Coordination Polymer.

PRIZES AND AWARDS

THOMAS HEALEY AWARD

Stefanie Alexander, Robert Elliott & Alessandra Bestetti

T.W. Healy Award commemorates the distinguished career of Emeritus Professor T.W. Healy, co-founder of the Australian Colloid and Surface Chemistry Student Conference, Dean of the Faculty of Science (1985-1990), President of the Academic Board (1997-1998) and Professor of Physical Chemistry until his retirement in 1998.

Awarded to students enrolled in at least the second year of a postgraduate degree by research in chemistry to assist the recipients to attend and present their research results at an International Conference (overseas or in Australia).

DWIGHTS PRIZE

James Clift

Dwight Prize in 1st Year Chemistry
Awarded to an outstanding student in 1st Year Chemistry going on to major in chemistry.

EXHIBITION PRIZE

Cheung Tung Shing Karen Steffi

Awarded to the student achieving the highest results in first year Chemistry. Does not have to be majoring in chemistry.

CA TAYLOR PRIZE

Josés Grady Nathanael

Awarded to an outstanding second year student who intends to major in Chemistry.

HUNTSMAN AUSTRALIA PRIZE

Matthew Megens

Awarded to a second year student proceeding to a major in chemistry in 3rd year.

AGILENT AWARD FOR EXCELLENCE

Stacey Rudd

Awarded to a 3rd year student with the highest results undertaking a Chemistry research project with preference for projects related to spectroscopy.

JS ANDERSON PRIZE

Tomer Simovich

Awarded to the student enrolled in the Honours Year of a Science degree who is majoring in Chemistry and who displays the greatest potential for research.

FRED WALKER SCHOLARSHIP

Stacey Rudd

Awarded to a 3rd year student for a 4th year of study in Chemistry in preparation for a Master of Science.

JAMES CUMING MEMORIAL SCHOLARSHIP

Major: Sarah Mann

Minor: Cameron Ritichie

2 scholarships (Major & Minor) were established for the study of Chemistry in its higher branches and to enable students to continue their studies after completion of the degree of Bachelor of Science. Awarded to the top Faculty Honours students going into straight Chemistry Honours.

KERNOT RESEARCH SCHOLARSHIP

Michael Leeming

Open to candidates who have completed the BSc Honours course.

THE STANLEY HARVEY PRIZE

Michael Leeming

John Henry Harvey made a bequest to award the Stanley Harvey Prize each year. This Prize is awarded to the winner of the Professor Kernot Scholarship.

DIXON RESEARCH SCHOLARSHIP

Maoyuan Liu

Awarded on the basis of fourth year honours results to a student continuing on to a higher degree.

RONALD RISEBOROUGH PRIZE

Edward Nagul

A donation was made in 1959 by students and staff of Chemistry and from Mrs F. Riseborough to perpetuate the memory of Ronald Riseborough. Awarded for the best fourth year research report in Applied Chemistry.

MONICA ELIZABETH REUM MEMORIAL PRIZE:

Nicole J. Rijs

Donated in 1998 by family, friends and colleagues in memory of Dr Monica Elizabeth Reum. Awarded to a PhD student who submits for assessment an outstanding thesis in an area of Organic Chemistry. The prize consists of a substantial monograph on some aspect of Organic Chemistry, with an inscribed book-plate and remainder of the available income in cash.

CHEMISTRY OUTREACH PROGRAM

The Outreach Program in 2012 was awarded the Vice-Chancellor's Engagement Excellence Award, recognising the success of the program and the effectiveness of our partnership with CSIRO Education in bringing chemistry education activities to schools. This year we worked with 20,403 students from Prep – Year 12, engaging these students in chemistry and supporting 1,076 of their teachers with interesting, curriculum relevant activities and professional development sessions.

It is particularly pleasing each year to host Year 12 students for our Analytical Instrument Workshops, where students use the School of Chemistry laboratories to complete requirements for their end-of-year assessment. Many of these students travel very long distances for a taste of the University experience – groups from Sea Lake, Portland, Bairnsdale and Swan Hill were leaving school at the crack of dawn for a day trip to our laboratories.

We were involved in some delicious chemistry educational activities: we took chocolate chemistry to the Queen Victoria Market (as guests of National Science Week) and to the Whittington Flamefest (hosted by RIAus) and to two groups of very keen 7-12 year old members of the Double Helix Science Club, going through the chemistry of chocolate making and accompanied by a chocolate sculptor.

Also in National Science Week, we hosted Kevin Liu – a very keen food science writer – who took a group of teachers through the chemical changes in making a Whiskey Sour. And we were particularly pleased to extend the funding to develop A Scientific Entrée, which will form a new set of classroom activities on dairy science & technology for Years 5-8. Six MSc students worked on the project late in 2012 to develop short instructional movies that will assist teachers with the theory and practice of classroom cheesemaking. 2012 was certainly a thoroughly delicious year.



ALUMNI FUNCTION 2012

LADY MASSON MEMORIAL LECTURE, 8 AUGUST 2012

Alumni were invited to the 29th Lady Masson Lecture, which was given by Professor Margaret Sheil, Provost of the University of Melbourne, in the Masson Theatre on 8 August 2012. The lecture, entitled 'What can we learn from Thomson, Heisenberg and Florey in framing research and innovation policy?', was well attended and stimulated much discussion.

The Lady Masson Lecture was established in 1949 to honour Lady Masson, wife of Professor of Chemistry, Sir David Orme Masson. In addition to her unwavering support of her husband's work, Lady Masson made a valuable contribution during World War I, and was awarded title of CBE in 1918. This special lecture acknowledges her place in Australian history.

More information on the chemistry Alumni functions can be obtained from the sites below.

[www.chemistry.unimelb.edu.au/
alumni-functions](http://www.chemistry.unimelb.edu.au/alumni-functions)

www.science.unimelb.edu.au/alumni



Left to right: Provost Prof Margaret Sheil, Katherine Bassett, Prof Frances Separovic, Ian Bassett (Grandson of Lady Masson) and Dr Valda McRae.

SUBJECTS

FIRST YEAR

Director: Muthupandian Ashokkumar

Deputy Director: Stephen Best

| | |
|-----------|---------------|
| CHEM10003 | Chemistry 1 |
| | M. Ashokkumar |

| | |
|-----------|---------------|
| CHEM10004 | Chemistry 2 |
| | M. Ashokkumar |

| | |
|-----------|---------------------------|
| CHEM10006 | Chemistry for Biomedicine |
| | M. Ashokkumar |

| | |
|-----------|---------------------------|
| CHEM10007 | Fundamentals of Chemistry |
| | M. Ashokkumar |

SECOND YEAR

Director: Stephen Best

| | |
|-----------|-------------------------|
| CHEM20011 | Environmental Chemistry |
| | Spas Kolev |

| | |
|-----------|-------------------------|
| CHEM20018 | Reactions and Synthesis |
| | Stephen Best |

| | |
|-----------|---------------------|
| CHEM20019 | Practical Chemistry |
| | Colette Boskovic |

| | |
|----------|--------------------------|
| CHEM2002 | Structure and Properties |
| | Stephen Best |

THIRD YEAR

Director: Uta Wille

| | |
|-----------|--|
| CHEM30012 | Analytical and Environmental Chemistry |
| | Spas Kolev |

| | |
|-----------|---------------------------|
| CHEM30013 | Chemical Research Project |
| | Ken Ghiggino |

| | |
|-----------|-----------------------------------|
| CHEM30014 | Specialised Topics in Chemistry B |
| | Uta Wille |

| | |
|-----------|------------------------------|
| CHEM30015 | Advanced Practical Chemistry |
| | Trevor Smith |

| | |
|-----------|--------------------------|
| CHEM30016 | Reactivity and Mechanism |
| | Uta Wille |

| | |
|-----------|-----------------------------------|
| CHEM30017 | Specialised Topics in Chemistry A |
| | Uta Wille |

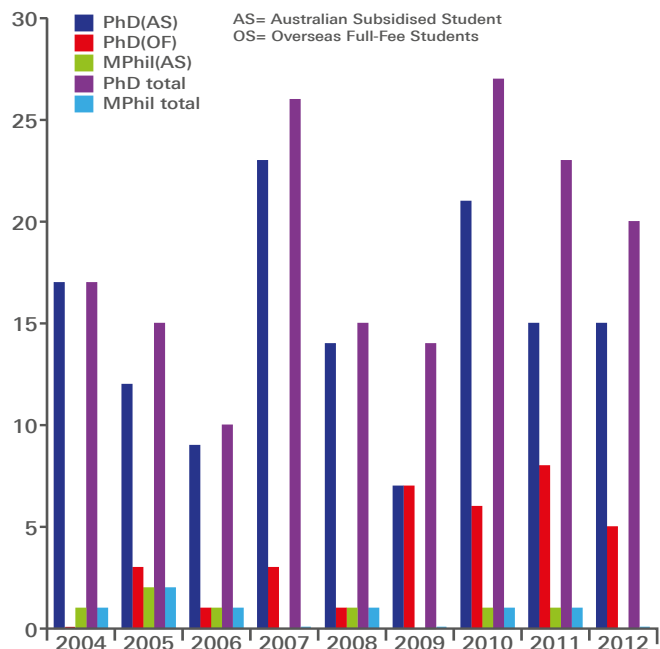
HIGHER YEARS

Honours, PG Diploma in Chemistry, MSc
Craig Hutton

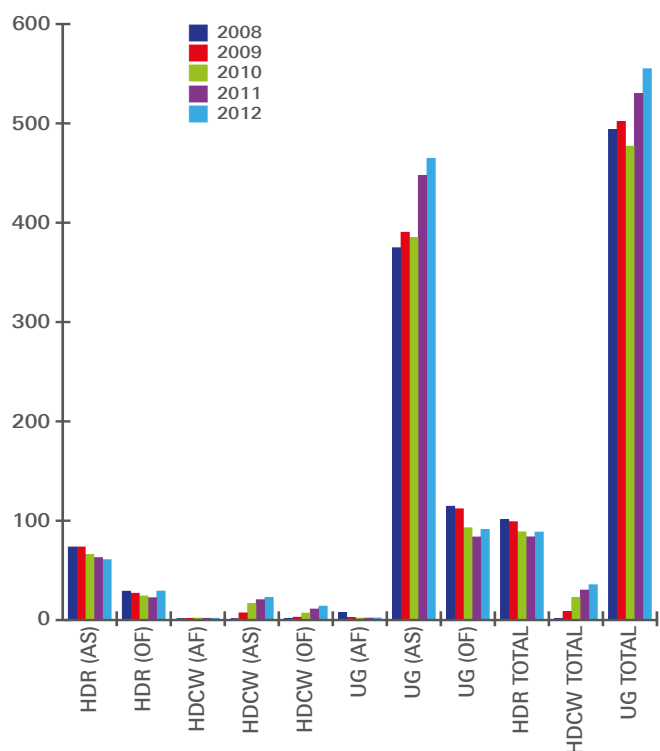


KEY TEACHING AND LEARNING STATISTICS

RESEARCH COMPLETIONS BY YEAR



TEACHING LOAD



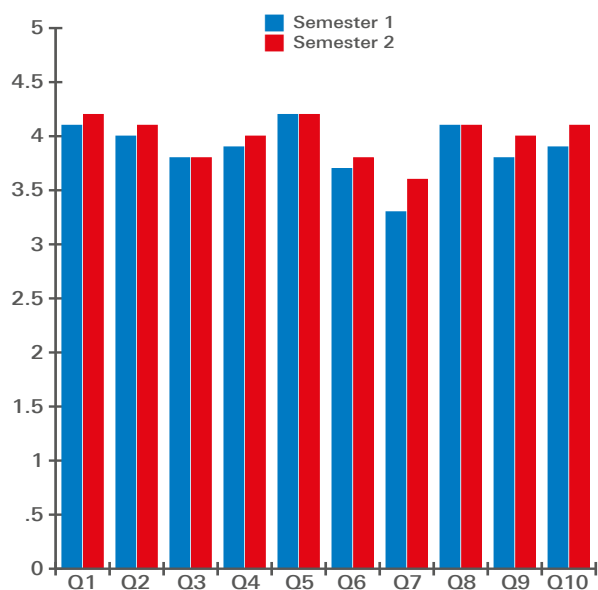
HDR (AS): Higher Degree Research/Australian Subsidised students
 HDR (OF): Higher Degree Research/Overseas Full-Fee students
 UG (AF): Undergraduate/Australian Full-Fee students
 UG (OF): Undergraduate/Overseas Full-Fee students
 UG (AS): Undergraduate/Australian Subsidised students
 *EFTSL refers to Effective Full-Time Student loan

SES

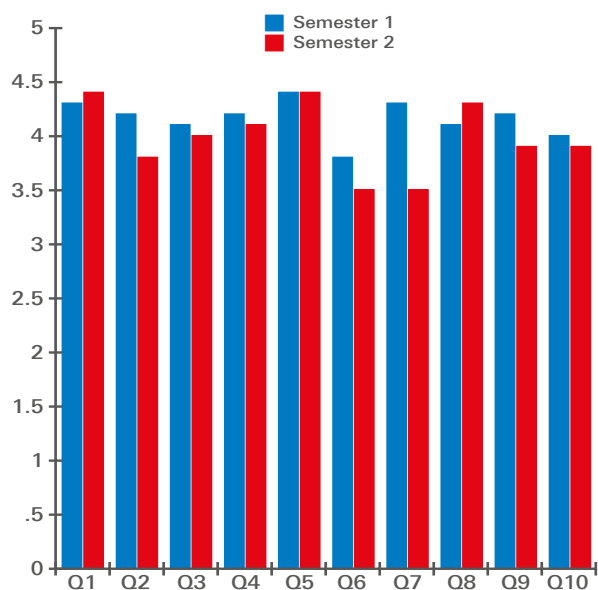
The SES survey provides feedback from undergraduate and postgraduate coursework students on their perceptions of the quality of teaching and learning experience for each subject in which they are enrolled.

Students are asked whether they strongly agree (5); agree (4); agree nor disagree (3); disagree (2); or strongly disagree (1) with 10 questions regarding the subject.

Undergraduate students



Graduate students



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

Jimmy Beenamma

Ultrasonic nebulisation of aqueous surfactant systems

Gojko Buncic

Synthesis and application of molecular probes for biologically important metal ions

Maryline Chee Lee Yin Chee Kimling

Sol-gel template synthesis of porous metal oxide beads for sequestration of radionuclides

Kwun Lun Cho

Development of superhydrophobic coatings

Lee Xin Chong

Molecular characterization of copper tolerance and resistance proteins and enzymes in gram-negative bacteria

David Ian Fernandez

Membrane interactions of Australian antimicrobial peptides

Asimo Karnezis

Gas & solution phase investigations into the β -, γ - and δ - effects of the group 14 metals utilizing trialkyl-pyridinium ions

Evelyn Laurens

Synthesis and biological analysis of novel Fluorine-18 positron emission tomography (PET) imaging agents for hypoxic tissues in tumours

Harvey Cong Li

Adventures with peroxy radicals as precursors for α -oxo carbenes and related reactive intermediates

Sin Chun Lim

Metal complexes for diagnostic imaging of cerebral perfusion and amyloid-beta plaques in Alzheimer's disease



Lauren Amy Palmer

Nanobubbles: their role in the hydrophobic force and wetting behaviour of surfaces

Nicole Joy Rijs

Organometallic reagent ions with coinage metals: gas phase reactivity

Zhenyu Shi

Parallel DNA assembly by recombination

Alexander Michael St John

Separation of uranium using polymer inclusion membranes

Jeremy Chin-Siong Tan

The synthesis of bicyclic lactams using the concept of self-terminating radical cyclisations

Phei Hsin Tan

Towards the synthesis of multipotent antihypertensive and antioxidant nitroxide containing sartans

Andrew Tilley

Confined conjugation MEH-PPV derivatives: synthesis, photophysics and energy transfer

David Chun-Ho Tso

Towards the crystal structure of β -silyl carbenium ions with higher electron demand

Keith Forrest White

Porous and lightweight networks for hosting guest gas molecules

Yue Yue Zho

Effect of sonication treatment on the physico-chemical properties of starch-based suspensions

RESEARCH FUNDING 2012

The School of Chemistry receives research funding and grants from a variety of sources, including the Australian Research Council (ARC), the National Health and Medical Research Council (NHMRC) and other Government and Industry bodies. We also have a wide range of sponsors who offer prizes and scholarships and collaborate on research and infrastructure projects.

RESEARCH PERFORMANCE FOR 2012

The School of Chemistry at the University of Melbourne is one of Australia's leading research centres in the chemical sciences, with an excellent international research reputation and an outstanding record in attracting research funding. The School performed strongly in nationally competitive grant schemes with new successful ARC Discovery Projects, Linkage, Future Fellowships and LIEF equipment infrastructure grants, and NHMRC Project as well as three ID Seed Grants. Wallace Wong and David Jones were awarded \$1.2M as part of the Australian Solar Institute (ASI) Australia- Germany Collaborative Solar R&D fund for their project "Enhancing efficiencies in printed solar cells by controlling morphology development".

The School hosts the ARC Centre of Excellence for Free Radical Chemistry and Biotechnology and is a participant in the ARC Centre of Excellence in Coherent X-Ray Science. The School is a major part of the Bio21 Institute and has strong links with the Melbourne Materials Institute, Centre for Aquatic Pollution Identification & Management, and the Particulate Fluids and Processing Centre. The Surface and Chemical Analysis Network (SCAN) is a School of Chemistry facility for materials and environmental analysis connecting industry with University researchers. Several academic staff are also members of the Australian Synchrotron Sciences Network.

The School of Chemistry was awarded several new ARC and NHMRC projects commencing in 2012, including:

Assoc. Prof. Brendan Abrahams & Prof. Richard Robson

New molecular architectures: synthesis, structure and properties

Prof. Evan Bieske

Laser spectroscopy of functional molecules

Dr Paul Donnelly

Copper complexes for the diagnostic imaging of Alzheimer's disease

Copper and gallium radiopharmaceuticals for the diagnosis and therapy of cancer

Modulating cellular copper levels to prevent the effects of excitotoxicity in neurodegenerative diseases (with Pathology)

Dr John Gehman & Prof. Frances Separovic

Advanced biophysical characterisation centre (with RMIT)

Assoc. Prof. Craig Hutton

Solid phase synthesis of side-chain cross-linked peptide oligomers

Prof. Spas Kolev

The pollution potential of mercury in legacy biosolids and possibilities for its minimisation by phytoremediation and phytostabilisation approaches

Prof. Robert Lamb

Tunable antifouling behaviour on rough surfaces

Prof. Frances Separovic

A 700 MHz Nuclear Magnetic Resonance (NMR) spectrometer for the Melbourne Biomolecular NMR Network: A high throughput resource (with Biochemistry)

Prof. Anthony Wedd & Dr Paul Donnelly

Redox sulphur chemistry in copper nutrition

Assoc. Prof. Spencer Williams

Dissecting catalysis and inhibition of a unique endo-acting mannose-processing glycosidase

The quality of our researchers is recognized by awards for research excellence including: Royal Medal to Andrew Holmes; AAS Fellowship to Frances Separovic; the Dean's Award for Excellence in Research to Paul Donnelly; Selby Research Award to Angus Gray-Weale; Gordon Conference Award and Young Investigator Award to Paul Donnelly; Australian Leadership

Award to Rachel Caruso; International Society of Magnetic Resonance (ISMAR) Fellow to Frances Separovic; Tall Poppy Awards to Chemistry graduates Georgina Such and Colin Scholes; Staff Engagement Excellence Award to Mick Moylan; Inspiring Australia Grant to Renee Beale; Mitzutani Foundation for Glycoscience grant to Spencer Williams; Go8 Australia- Germany Research Cooperation Award to Uta Wille; three Melbourne Research Interdisciplinary Seed Funding grants; Dyason Award to Mark Rizzacasa; Early Career Award to Chris Ritchie; ASI Postdoctoral Fellowship to Viktoras Dryza; McKenzie Fellowships to Marco Lista and Willem van der Heuvel; and Victorian Young Nanotechnology Ambassador Award to Julia Baldauf.

In 2012 The School of Chemistry held and participated in many conferences and events, some of which are: International Chemistry Conference on Organic Synthesis (ICOS); The Lady Masson Memorial Lecture; RACI Inorganic Chemistry Group (VIC) Symposium; and the Miegunyah Public Lecture. The School also co-sponsored the Materials of Life Symposium held at the Melbourne Brain Centre Auditorium and the Australian Workshop for Chemical Biology at the Bio21 Institute.





ARC CENTRE OF EXCELLENCE FOR FREE RADICAL CHEMISTRY AND BIOTECHNOLOGY

The ARC Centre of Excellence for Free Radical Chemistry and Biotechnology (The Free Radical Centre) had an eventful year continuing to be well represented in the international radical community. There were symposia dedicated to the lives of free radical greats, and international conferences showcasing the latest in research developments.

Outcomes were highlighted through a number of press releases, including television and radio, and through podcasts. There were numerous achievements by individuals and by teams, and through dynamic community engagement. Several research initiatives are positioned for sustainability beyond the current ARC Centre grant, as evidenced by cross-node and multi investigator outputs, and the camaraderie shown by Centre members in general.

It is clear that The Free Radical Centre is contributing strongly to the international free radical scene through multiple articles in top peer-reviewed journals and through strong presence and participation at international conferences. Research highlights for the year include contributions to improving the efficiency of dye-sensitised solar cells and the discovery of new fats and lipids in the human lens with links to disease, among many others. Centre research was also published in *Nature* and contributed five chapters to *The Encyclopedia of Radicals in Chemistry, Biology and Materials*, 100 peer-reviewed journal articles and 209 conference presentations. In addition, Centre members also contributed to a book, 6 book chapters, a patent application, and featured on 286 occasions in the popular media, including 16 radio or television interviews.

In late November, 75 Centre members and invited guests met at the Innovation Campus of the University of Wollongong for the annual Centre "Carnival" and were treated to a healthy array of student and postdoc presentations. Derek Pratt from Ottawa made for an impressive plenary speaker, while Michelle Coote from ANU and Mike Davies from the Heart Research Institute rounded out the programme with keynote lectures. An independent panel of judges



Left to right: Artist Steve Lopez, Centre Manager Dr Linda Feketeora and artist Peter Sharp.

deliberated on student oral and poster presentation prizes.

Through Renee Beale's leadership, The Free Radical Centre made impressive contributions to Community Awareness in 2012. The Centre sponsored several major events that included the Radical Wine and Chocolate event at the Western Australian Museum, the Science Discovery Expo in the Bio21 Institute, The Market of the Minds in City Square Melbourne, and Radical Beer at the Brewery in Wollongong. With the award of an Inspiring Australia: Unlocking Australia's Potential grant from DIISRTE, the Centre, together with its partners, embarked on a programme to communicate information about free radicals through the use of art. Following on from Concept Radical in 2011, a number of high-profile Australian artists become artists-in-residence under the guise of a visionary programme called Insight Radical. This is the largest outreach project embarked upon by The Free Radical Centre and will culminate with an exhibition of works in London during 2013.

As we enter the final year of ARC funding, it is clear that The Free

Radical Centre has given birth to a number of activities that will spin out with healthy lives of their own, sustained through a number of key opportunities. The ARC Centre of Excellence for Free Radical Chemistry and Biotechnology was impressive during 2012 and congratulations go to each of the Centre's Members for their contributions.

CONFERENCES 2012

| | | | |
|------------------------------|----------|---|--------------------------|
| Dr Sneha Abraham | October | International Conference on Emerging Advanced Nanomaterials (ICEAN) | Brisbane QLD |
| Prof Muthupandian Ashokkumar | July | 13th Meeting of the European Society of Sonochemistry | Lviv, Ukraine |
| | October | International Nonthermal Food Processing Workshop FIESTA 2012 | Melbourne VIC |
| Prof Evan Bieske | February | Gordon Research Conference | Ventura USA |
| | April | Workshop on Chemical Dynamics and Molecular Spectroscopy | Taipei Taiwan |
| | April | 16th Eastern Asian Workshop on Chemical Dynamics | Hsinchu Taiwan |
| | November | Asian International Symposium of Atomic and Molecular Physics | Taipei Taiwan |
| Dr Colette Boskovic | July | International Conference on Molecular Materials (MOLMAT) | Barcelona Spain |
| | October | International Conference on Molecule-Based Magnets (ICMM) | Orlando USA |
| | November | Italian-Australian Workshop on Nanostructured Materials for Magnetic and Spintronic Devices | Canberra ACT |
| Assoc Prof Rachel Caruso | February | 7th Annual International Electromaterials Science Symposium | Geelong VIC |
| | March | 243rd ACS National Meeting | San Diego USA |
| | July | 1st International Conference on BioNano Innovation | Brisbane QLD |
| | October | 7th Aceanian Conference on Dye-Sensitized and Organic Solar Cells | Taipei Taiwan |
| Dr Maryline Chee Kimling | October | International Conference on Emerging Advanced Nanomaterials | Brisbane QLD |
| Mrs Penny Commons | February | Science Teachers Association of Victoria Chemistry Conference | Melbourne VIC |
| | November | Chemistry Education Association November Lectures | Melbourne VIC |
| Dr Augustine Doronila | January | After mining workshop: Improving Training of Environmental Scientists and Developing Management Strategies for Community-based Ecological Restoration Projects of Mined Lands | Baguio City, Philippines |
| | February | 1st Indonesian International Conference on Environmental, Socio-economic, and Health Impacts of Artisanal and Small Scale Mining | Malang Indonesia |
| | July | 4th International Congress on Arsenic in the Environment | Cairns QLD |
| | November | Arbuscular Mycorrhizal Fungi (AMF) and Biosolids Enhance the Growth of Native Australian Grasses on Sulphidic Gold Mine Tailings | Melbourne VIC |
| | November | 1st Conference of the Society for Ecological Restoration Australasia | Stawell VIC |
| Dr Paul Donnelly | June | Young Investigator Award' Speaker: Gordon Research Conference on Metals in Medicine | New Hampshire USA |
| | November | 6th Asian Bioinorganic Chemistry Conference | Hong Kong China |

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| Dr Linda Feketeova | May | 51st Annual Meeting of Particle Therapy Co-Operative Group (PTCOG51) | Seoul Korea |
| | June | Workshop on Solid State Dosimetry in Neutron and Ion Radiation Fields | Mainz Germany |
| | September | 19th International Mass Spectrometry Conference (IMSC2012 & The 3rd Asian and Oceanic Mass Spectrometry Conference (AOMSC-3) | Kyoto Japan |
| Dr Maria Ines Gameiro Sa Almeida | September | Polymer inclusion membranes: Concept and applications. | London UK |
| Assoc Prof Michelle Gee | September | Fluoro 2012: Use of optical spectroscopy and microscopy techniques in biological and biomedical research | Sydney NSW |
| | December | AuPS/PSNZ/ASB Joint Meeting | Sydney NSW |
| Dr John Gehman | February | US Biophysical Society Meeting | San Diego USA |
| Professor Ken Ghiggino | September | 3rd International Organic Excitonic Solar Cell Conference (IOESC:2012) | Brisbane QLD |
| | November | 7th Asian Photochemistry Conference (APC 2012) | Osaka Japan |
| Dr Angus Gray-Weale | October | 10th Asian International Seminar on Atomic and Molecular Physics | Taipei Taiwan |
| | October | 222nd Electrochemical Society | Honolulu Hawaii |
| Professor Andrew Holmes | February | Newton Abraham Public Lecture | Oxford UK |
| | February | John B Goodenough Award Lecture | Birmingham UK |
| | April | Joint Chinese Chemical Society-RSC Symposium | Chengdu China |
| | June | IUPAC World Polymer Congress | Blacksburg USA |
| | Aug | 244th ACS National Meeting Division of Energy and Fuel Cells | Philadelphia USA |
| | November | H Dudley Wright Foundation Colloquium Lecturer | Geneva Switzerland |
| Dr Sonia Horvat | July | 11th International Symposium on Organic Free Radicals | Bern Switzerland |
| Assoc Prof Craig Hutton | February | Gordon Research Conference on Chemistry & Biology of Peptides | Ventura USA |
| | July | 19th International Conference on Organic Synthesis (ICOS19), in conjunction with the 24th Royal Australian Chemical Institute Organic Conference (RACIOC24) | Melbourne VIC |
| Dr David Jones | October | IWAMSN 2012 | Ha Long Vietnam |
| | December | 50th Annual Australian Solar Council (AuSES) | Melbourne VIC |
| Dr George Khairallah | May | 60th American Society for Mass Spectrometry (ASMS) Conference | Vancouver Canada |
| | September | 19th International Mass Spectrometry Conference | Kyoto Japan |
| Assoc Prof Spas Kolev | February | Conference on Emerging Trends in Separation Science and Technology | Mumbai India |
| | April | Asia-Pacific Conference on Analytical Sciences | Manila Phillippines |
| | July | 7th Australasian Membrane Society Conference | Busan South Korea |
| | September | 1st International Conference of the Indonesian Chemical Society | Malang Indonesia |
| | September | 12th International Conference on Flow Analysis | Thessaloniki Greece |
| | December | R&D Topics Conference | Melbourne VIC |

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|-----------------------------|-----------|---|---------------------|
| Professor Robert Lamb | April | Asia Pacific Analytical Sciences | Manila Phillippines |
| | May | Canadian Synchrotron Conference | Saskatoon Canada |
| | June | 16th International Congress on Marine Corrosion and Fouling | Seattle USA |
| | July | Synchrotron Radiation Instrumentation | SRIIO |
| | October | Forum on Advanced Materials Research | Chengdu China |
| Mr Mick Moylan | November | STAVON | Melbourne VIC |
| | November | CEA November Lectures | Melbourne VIC |
| Professor Paul Mulvaney | May | NaNaX5 | Malaga Spain |
| | May | CSIRO Workshop on Sol-Gel Electronics | Melbourne VIC |
| | June | Yamada Conference on Photoenhanced Energy Conversion in Nanostructured Systems | Tokyo Japan |
| | June | Gordon Conference on Metal Nanoparticles | Easton USA |
| | July | OSNOS Conference | Dresden Germany |
| | October | 4th NanoCon Conference | Brno Czech Republic |
| Professor Richard O'Hair | May | 60th American Society for Mass Spectrometry (ASMS) Conference | Vancouver Canada |
| | June | 34th Reaction Mechanisms Conference | |
| | September | 19th International Mass Spectrometry Conference | Kyoto Japan |
| Dr Brett Paterson | September | 40th International Conference on Coordination Chemistry (ICCC40) | Valencia Spain |
| Dr Christopher Ritchie | November | Frontiers in Metal Oxide Cluster Science | Lanzaraote Spain |
| Professor Mark Rizzacasa | February | Zing Natural Products Conference | Lanzaraote Spain |
| | July | 19th IUPAC International Conference on Organic Synthesis/24th RACI Organic Division Conference | Melbourne VIC |
| | September | 1st International Symposium on Natural Product Synthesis and Process Methods for Drug Manufacture | Chongqing China |
| Dr Marc-Antoine Sani | December | Australian Society of Biophysics | Sydney NSW |
| Professor Carl Schiesser | March | 243rd American Chemical Society National Meeting and Exposition | San Diego USA |
| | June | 25th International Symposium on the Organic Chemistry of Sulfur | Czestochowa Poland |
| | June | Workshop on Solid State Dosimetry in Neutron and Ion Radiation Fields | Mainz Germany |
| | July | 11th International Symposium on Organic Free Radicals | Berne Switzerland |
| | August | 244th American Chemical Society Nation Meeting and Exposition | Philadelphia USA |
| | November | 19th Annual Meeting of the Society for Free Radical Biology and Medicine | San Diego USA |
| | December | IV Encontro Sobre Selenio e Telurio Brasil | Torres Brazil |
| | December | Intramolecular Homolytic Substitution of Seleninates - A Computational Study | Torres Brazil |
| Professor Frances Separovic | February | 56th Biophysical Society Meeting | San Diego USA |
| | May | Science at the Shine Dome | Canberra ACT |
| | July | EuroMar 2012 Magnetic Resonance Conference | Dublin Ireland |
| | November | Lipid-protein interactions in membranes: implications for health and disease | Hyderabad India |
| | December | 36th Annual Meeting of the Australian Society for Biophysics | Sydney NSW |

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|---------------------------|-----------|---|----------------------|
| Assoc Prof Trevor Smith | January | Molecular Materials Meeting (M3) An international conference on Frontiers in Materials Science, Chemistry & Physics | Biopolis Singapore |
| | April | Focus on Microscopy 2012 | Singapore |
| | June | Workshop on Optical Microscopy in Life Sciences | Wuhan China |
| | July | Ultrafast Phenomena | Lausanne Switzerland |
| | July | XXIV IUPAC Symposium on Photochemistry | Coimbra Portugal |
| | September | Japanese Photochemistry Association Annual Meeting on Photochemistry 2012 | Tokyo Japan |
| | October | 2012 Symposium on Recent Development of Nanomaterials: Structures, Dynamics and Applications | Taipei Taiwan |
| Dr Alesssandro Soncini | June | Accurate methods for accurate properties: a conference to mark the 60th birthday of Peter R. Taylor | Zurich Switzerland |
| | November | ANSTO- Italian-Australian Workshop on Nanostructured Materials for Magnetic and Spintronic Devices | Canberra ACT |
| Professor Peter Taylor | May | Strongly correlated systems: a conference in honour of the 60th birthday of Per-Aake Malmqvist | Palermo Italy |
| | June | Accurate methods for accurate properties: a conference to mark the 60th birthday of Peter R. Taylor | Zurich Switzerland |
| | November | Supercomputing 2012 | Salt Lake City USA |
| Assoc Prof Peter Tregloan | May | LAK12 - Second International Conference on Learning Analytics and Knowledge | Vancouver Canada |
| | September | Thinking through Drawing | London UK |
| | November | Southern Solar Flare, Society for Learning Analytics Research | Sydney NSW |
| Professor John Webb | March | International Conference on Technology Education and Development INTED - 6 | Valencia Spain |
| | May | Rabindranath Tagore. A myriad minded genius | Perth WA |
| | September | Towards a better innovation ecosystem | New Delhi India |
| | November | CSIRO - India Workshop on Collaboration | Canberra ACT |
| Professor Anthony Wedd | January | Meeting of International Society for Zinc Biology | Melbourne VIC |
| | July | Biometals 2012 | Brussels Belgium |
| | November | 6th Asian Conference on Biological Inorganic Chemistry | Hong Kong China |
| | November | Inorganic Chemistry Symposium of RACI Victorian Branch | Melbourne VIC |
| Assoc Prof Jonathan White | December | Australia Asia Crystallography Conference | Adelaide SA |
| Dr Uta Wille | July | ICOS19/RACIOC24 | Melbourne VIC |
| | December | 36th Annual Synthesis Symposium | Melbourne VIC |
| Dr Spencer Williams | July | 27th International Carbohydrate Symposium | Madrid Spain |
| | July | International Conference on Organic Synthesis, ICOS19 | Melbourne VIC |
| Dr Wallace Wong | July | International Conference on Synthetic Metals | Atlanta USA |
| | September | International Conference on Organic and Excitonic Solar Cells | Brisbane QLD |
| Dr Alex Wu | June | 16th International Congress on Marine Corrosion and Fouling | Seattle USA |
| Dr Xiao Zhiguang | January | International Society for Zinc Biology 2012 Conference | Melbourne VIC |
| | November | Australian Conference of Free Radical & Metal Biology 2012 | Brisbane QLD |

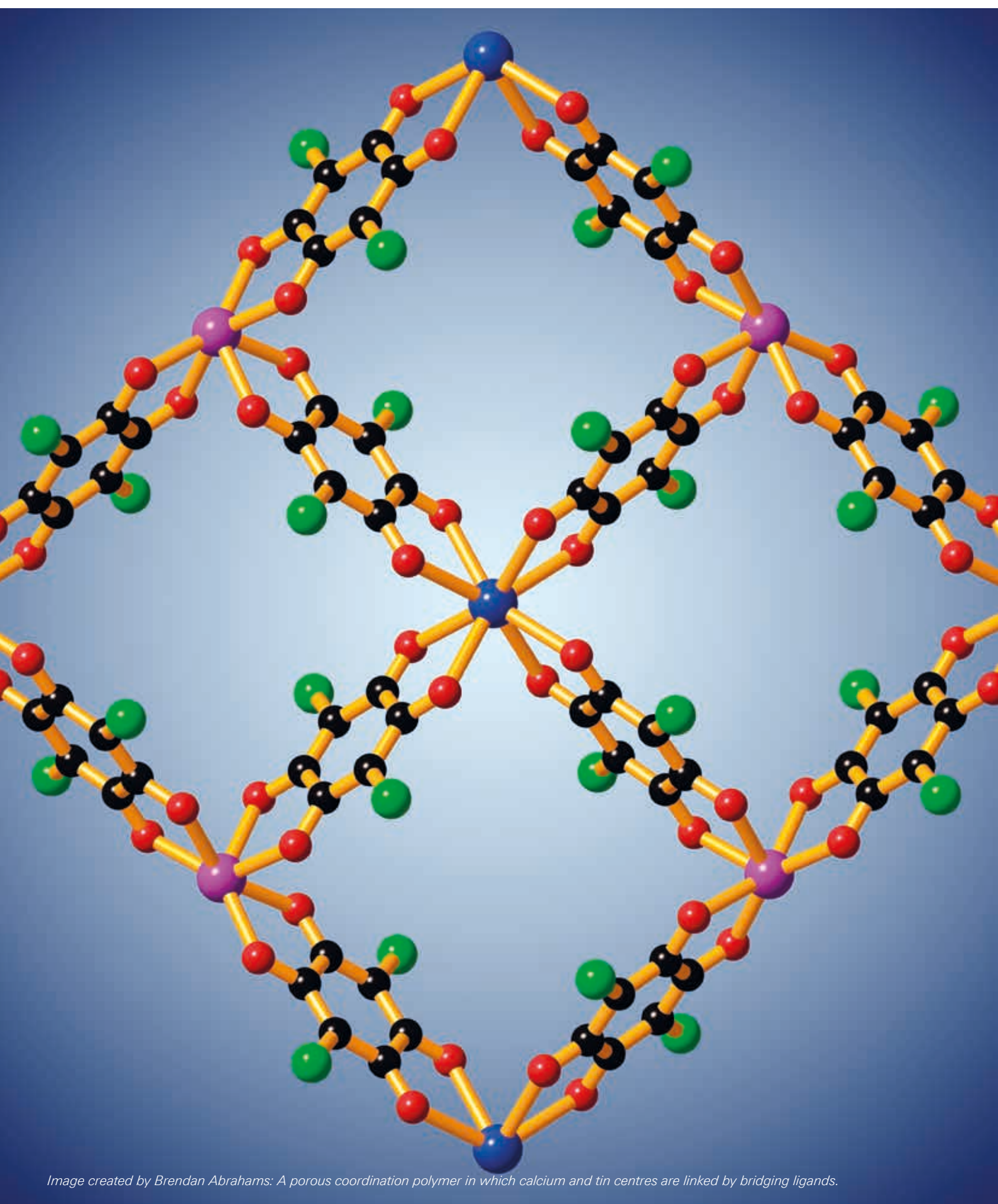


Image created by Brendan Abrahams: A porous coordination polymer in which calcium and tin centres are linked by bridging ligands.

INORGANIC AND ANALYTICAL CHEMISTRY SEMINAR PROGRAM

Coordinator: Professor Tony Wedd E: agw@unimelb.edu.au

13 FEBRUARY

Dr Tom Faust
University of Manchester
"Molecular Rings for Quantum Information Processing"

6 MARCH

Dr Masumi Itazaki
Osaka City University
"A Versatile Iron Complex Catalyzing C-CN Bond Cleavage and C-Si and C-Ge Bond Formation"

13 MARCH

Prof Philip Marriot
Monash University
"Earth, Wind, Fire & Water – Separation & Discovery"

20 MARCH

Dr Chris Sumby
University of Adelaide
"Incorporating Additional Functionality into Porous Coordination Polymers"

27 MARCH

Dr Max Massi
Curtin University
"Application of phosphorescent lanthanoid and transition metal complexes in materials and life science"

3 APRIL

Dr William Donald
University of Melbourne
"The Mass Spectrometer as a Chemical Laboratory- Absolute Electrochemistry, Ion Fluorescence, and Biomimetic Chemistry"

Prof Anthony Wedd
University of Melbourne
"From Literature: Remarkable Metallo-Protein Structures"

17 APRIL

Ms Youngsoo Choo
University of Melbourne
"Polymer Inclusion Membranes for the Clean-up of Process Water from Gold Mining Using Thiocyanate and Cyanide Extractants"

24 APRIL

Prof Irene Yarovsky
RMIT University
"Nano-materials for biomedical Applications: Exploring the Role of Protein-Solid Surface Interactions"

1 MAY

Dr Anne Richards
La Trobe University
"Design and Synthesis of Molecular Cages and Polymers"

8 MAY

Robert Elliott
University of Melbourne
"Rocket Fuels"

Matthew Wooley
University of Melbourne
"Chemistry of Metallic High Temperature Superconductors"

15 MAY

Dr Andy Ohlin
Monash University
"Aqueous Reactions of Metal Oxide Clusters"

22 MAY

Prof Peter Junk
Monash University
"New metal based syntheses in rare earth chemistry"

25 JULY

Professor Rob Deeth
University of Warwick
"Transition Metal Computational Chemistry: Beyond DFT"

31 JULY

Dr Yanyan Mulyana
Monash University
"Ruthenium Complexes: From Bio-Inspired Energetic Materials"

7 AUGUST

Professor Stuart Batten
Monash University
"Beautiful Structures I Have met: a Tour of Attractive Coordination Polymers"

14 AUGUST

Dr Anthony O'Mullane
RMIT University
"Metal Nanoparticle-decorated TCNQ-based Coordination Polymers as both Heterogeneous and Photocatalysts"

21 AUGUST

Dr Paul Frances
Deakin University
"Chemical Reactions That Produce Light: New insights and Analytical Applications"

28 AUGUST

Dr Helen Maynard-Casely
Australian Synchrotron
"In situ Studies with Synchrotron Powder Diffraction: Applications on Earth and Beyond"

4 SEPTEMBER

Dr Jason Dutton
La Trobe University
"Theoretical and Synthetic Investigations of Main Group Compounds in Zero Oxidation States"

11 SEPTEMBER

Ms Ya Ya Bonggotgetsakul
University of Melbourne
"Paper-based Devices for Analysis in Life Science"

18 SEPTEMBER

Ms Hannah Alcantara
University of Melbourne
"Plants Under Stress? Aspirin is the Answer!"

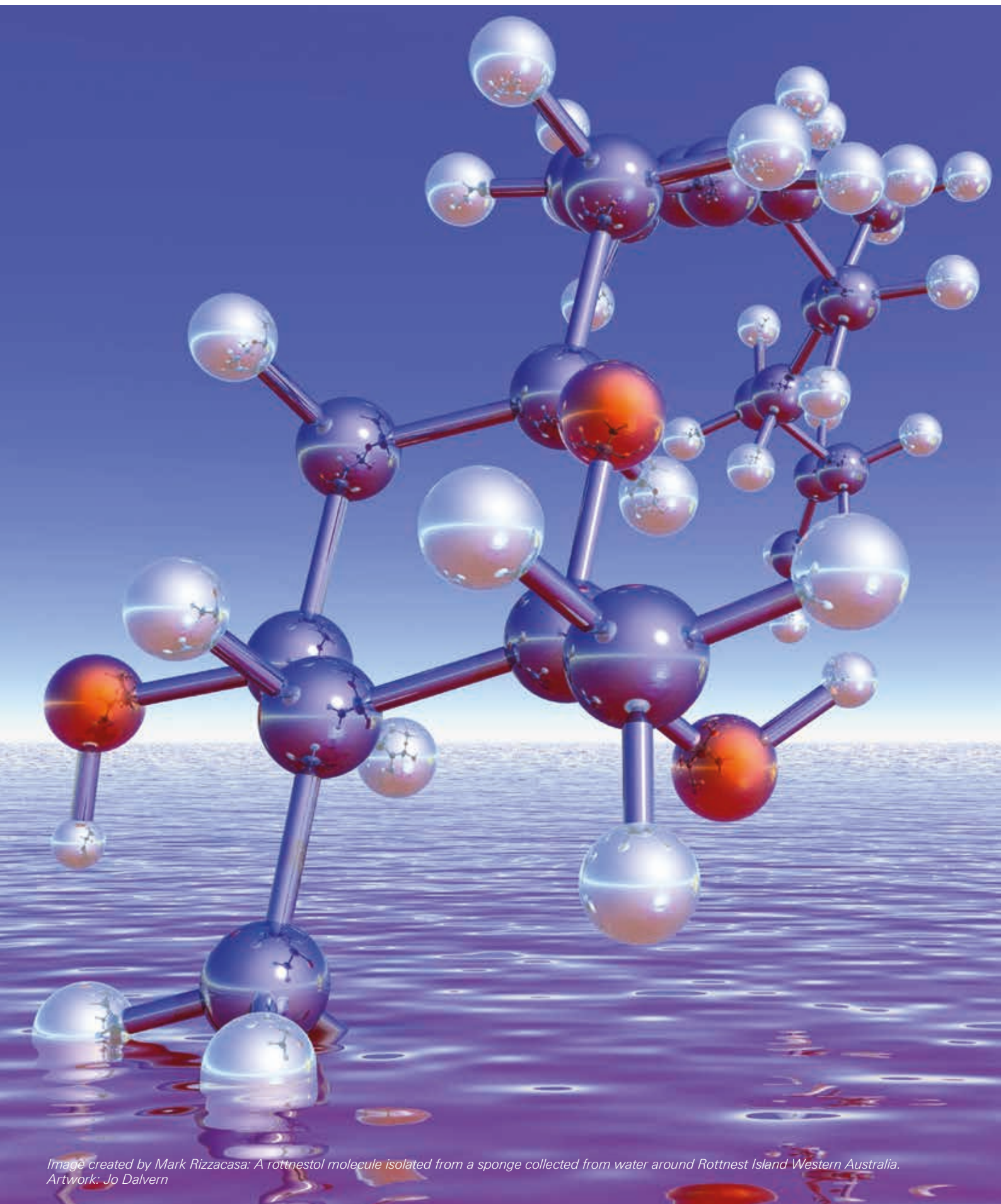
2 OCTOBER

Professor Annie Powell
University of Karlsruhe
"Supramolecular Approaches to Enhancing Single-Molecule Magnet Properties"

9 OCTOBER

Ms Yuki O'Bryan
University of Melbourne
"Real-time Monitoring of Drug Delivery Systems"

Ms Adlin Ramdzan
University of Melbourne
"Baking Classes with a Master Chemist: The Use of Ultrasonics in Cake-Making"



ORGANIC CHEMISTRY SEMINAR PROGRAM

Coordinator: Dr Wallace Wong E: wwhwong@unimelb.edu.au

17 FEBRUARY

Prof Ian Paterson
University of Cambridge

"Progress, Problems and Serendipity in Polyketide Synthesis"

24 FEBRUARY

Dr Marcus Baumann
University of California

"Total synthesis of natural and unnatural epidithiodiketopiperazines and their evaluation as potent anticancer compounds"

2 MARCH

Professor Dale Ward
University of Saskatchewan

"Synthetic Studies on Marine Polypropionates"

9 MARCH

Prof Mukundan Thelakkat
University of Bayreuth

"Understanding, controlling and tuning morphology in polymer and hybrid solar cells"

30 MARCH

Roland Fitzner
University of Ulm

"Dicyanovinyl-capped oligothiophene donor materials for molecular organic solar cells"

13 APRIL

Dr Bruce Cornell
Surgical Diagnostics Pty Ltd
Sydney

"Ligand and voltage gated ion channel measurements in tethered membranes by AC and DC impedance spectroscopy"

27 APRIL

Professor Shelli R McAlpine
University of New South Wales

"Macrocycles: the perfect tools to explore protein function"

4 MAY

Dr Fabrice Denes
University of Nantes

"Alpha-Bromo-Aluminum Acetals in Radical Chemistry: Scope and Limitation"

22 MAY

Professor Robert Flowers
Lehigh University

"Give or Take an Electron: Mechanistic Studies of Single Electron Transfer in Important Synthetic Reactions"

1 JUNE

Dr Luke Hunter
University of New South Wales

"Fluorinated amino acids: building blocks for the synthesis of shape-controlled bioactive peptides"

15 JUNE

Professor Steen Brøndsted Nielsen
Aarhus University

"Electron-induced dissociation of peptide cations – by collisions or light"

22 JUNE

Dr Anastasios Polyzos
CSIRO

"Flow Chemistry: An Enabling Technology for Chemical Synthesis"

10 JULY

Professor Minoru Isobe
National Tsing Hua University

"Marine Bioluminescence Chemistry of Photoprotein-Coelenterazine System"

10 AUGUST

Dr Balaji Purushothaman
University of Melbourne

"Stabilizing Reactive Acenes for Device Applications"

17 AUGUST

Dr Henk Dam
University of Melbourne

"Polyrotaxanes as component for drug delivery systems"

27 AUGUST

Professor Gregory A. Weiss
University of California

"Exploring Biology and Chemistry with Nanometer-Scale Electronics"

31 AUGUST

Professor Yongfang Li
Institute of Chemistry, Chinese Academy of Sciences

"Photovoltaic Materials and Devices for High Efficiency Polymer Solar Cells"

7 SEPTEMBER

Paul Sylvester
University of Melbourne

"Profluorescent Nitroxides and the Coil Coating Industry" – PhD swansong

14 SEPTEMBER

Marilena Giarrusso
University of Melbourne

"Towards Novel Fluorescent Angiotensin AT1 Receptor Antagonists" – PhD swansong

21 SEPTEMBER

Mohammad Haskali
University of Melbourne

"¹⁸F-Fluorine radiolabelled peptides for PET imaging of cancer" – PhD swansong

28 SEPTEMBER

Dr David Lupton
Monash University

"Acyl anion free N-heterocyclic carbene organocatalysis"

8 OCTOBER

Rohan Williams
University of Melbourne

"Investigating the mechanism of mannosidases: synthesis of inhibitors and substrates"

12 OCTOBER

Tu Anh Tran
University of Melbourne

"Homolytic Addition Reactions of Acyl Radicals with Triple Bond Systems" – PhD swansong

19 OCTOBER

Dr Rohan John Kumar
University of Melbourne

"Self-Assembly of Organic Semiconductors for Organic Photovoltaic Applications"

23 OCTOBER

Assoc Prof Derek Pratt
University of Ottawa

"The Old and the New in Cholesterol Oxidation and the Role of Sulfenic Acids in the Antioxidant Activity of Garlic and Related Alliums"

26 OCTOBER

Dr Jamie Simpson
Monash University

"The big and the small of it: lipid prodrugs and fragment-based lead design"

2 NOVEMBER

Dr Guillaume Lessene
Walter and Eliza Hall Institute

"Discovery of small molecules interfering with BCL-2 driven cell survival pathway"

9 NOVEMBER

Aaron Song
University of Melbourne

"Functional Conjugated Polymers – From Design to Devices" – PhD swansong

15 NOVEMBER

Linda Chan
University of Melbourne

"Structure-function relationship studies on human relaxin-2 leading to the development of novel receptor-selective analogues" – PhD Completion Seminar

23 NOVEMBER

Prof Rainer Herges
University of Kiel

"Spin Switching in Isolated Molecules: Molecular Machines in Medical Imaging"

26 NOVEMBER

Dr Paul C. Taylor
University of Warwick

"Uncovering Interactions between Drugs and Hormones and their Protein Targets using the Magic Tag Chemical Genomics Tool"

30 NOVEMBER

Jesse Barton
University of Melbourne

"Diketopyrrolopyrroles for Solar Cells" – PhD Completion Seminar

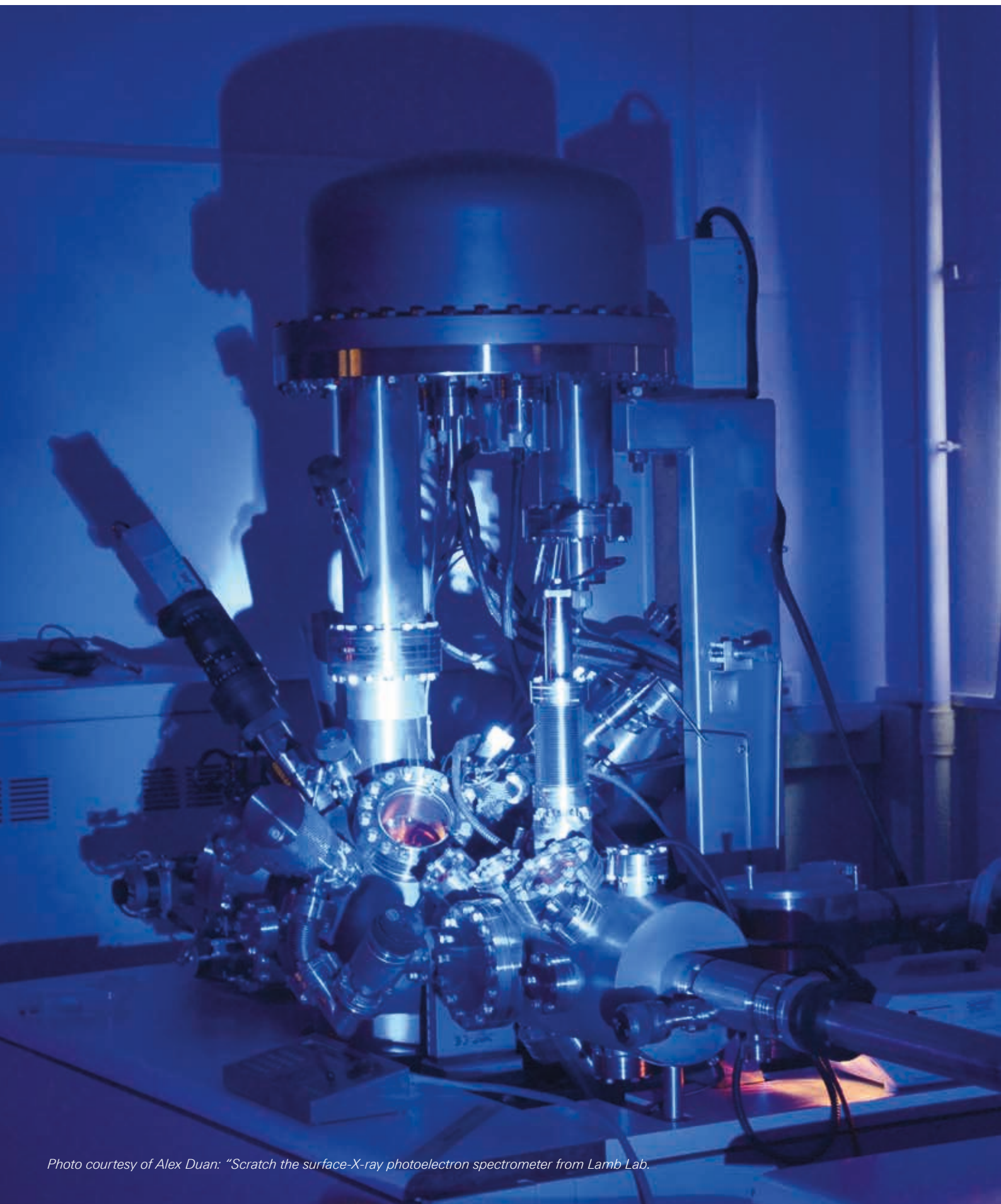


Photo courtesy of Alex Duan: "Scratch the surface-X-ray photoelectron spectrometer from Lamb Lab.

PHYSICAL CHEMISTRY SEMINAR PROGRAM

Coordinator: Dr Alessandro Soncini E: asoncini@unimelb.edu.au

13 MARCH

Dr Christian Evenhuis
Department of Chemistry
and The PULSE Institute,
Stanford University

"Simulating Excited State
Dynamics"

23 APRIL

Assoc Prof Timothy Schmidt
School of Chemistry,
University of Sydney

"Photonic Alchemy: Turning
Red into Gold for Improved
Solar Energy Conversion"

9 MAY

Dr A. Alia
Leiden Institute of
Chemistry, Solid State NMR,
University of Leiden

"Direct access to the heart of
the photosystem II membrane
protein complex by Photo-
CIDNP Solid State NMR"

14 MAY

Dr Seth Olsen
University of Queensland

"The Chemistry and Physics of
Charge-Resonance"

21 MAY

Dr David Huang
School of Chemistry and
Physics, University of
Adelaide

"Slip, ion specificity, and other
molecular effects in surface-
driven flow for microfluidics and
nanofluidic energy conversion"

28 MAY

Assoc Prof Toby Allen
School of Applied Sciences,
RMIT

"Uncovering membrane charge
transport mechanisms"

18 JUNE

Dr Jean Wyer
Department of Physics
and Astronomy, Aarhus
University

"Spectroscopy of isolated heme
ions in vacuo"

25 JUNE

Dr Chris McNeill
Department of Materials
Engineering, Monash
University

"Soft X-ray Characterisation of
Organic Semiconductor Films"

20 JULY

**Professor William M.
Jackson**
Department of Chemistry,
University of California Davis

"Photodissociation of High
energy states of N₂ and CO
using two tunable VUV sources
and a time-sliced velocity-map
ion imaging apparatus"

27 AUGUST

**Leena Chandhi
Dharmarathne**
School of Chemistry,
University of Melbourne

"Ultrasound Initiated Electron
Transfer to Colloidal Micro
Electrodes", PhD Swangsong

1 OCTOBER

**Professor Thomas M.
Klapötke**
Department of Chemistry,
Energetic Materials
Research, LMU Munich

"Energetic Materials Research
at LMU Munich"

8 OCTOBER

Dr Michelle J. S. Spencer
Department of Chemistry, La
Trobe Institute for Molecular
Science, La Trobe University

"Nanomaterials for Sensors,
Electronic Devices and
Batteries"

15 OCTOBER

Nicholas Tse
CSIRO and School of
Chemistry, University of
Melbourne

"Nanostructured
nanoparticulates for the use
as medical contrast", PhD
Swangsong

19 OCTOBER

Dr Rohan John Kumar
University of Melbourne

"Self-Assembly of Organic
Semiconductors for Organic
Photovoltaic Applications"

26 OCTOBER

Professor Marco Affronte
Department of Physics,
University of Modena, and
CNR Nanoscience Institute
S3

"Molecular nanoMagnets for
refrigeration and spintronics"

5 NOVEMBER

**Dr Gallo Soler-Illia, Wilsmore
Fellow**
Gerencia Quimica, Comision
Nacional de Energia Atomica
(CNEA), Argentina

"Designed mesoporous
thin films: Architecture and
decoration at the nanoscale"

19 NOVEMBER

**Dr Ekaterina Pas, 2011 RACI
Physical Chemistry Division
Lectureship Award**
School of Chemistry,
Monash University

"First Principles approaches to
studying ionic liquids"

26 NOVEMBER

Emma Hooley
School of Chemistry,
University of Melbourne

"Single molecule spectroscopy
of conjugated polymers", PhD
Swangsong

3 DECEMBER

Julia Baldauf
Bio21 and School of
Chemistry, University of
Melbourne

"The effects of external fields
on the optical properties of
nanocrystals", PhD Swangsong

5 DECEMBER

Dr Asaph Widmer-Cooper
School of Chemistry,
University of Sydney

"Directing the assembly of
nanoparticles for plasmonic
and solar energy applications:
insights from simulations"

10 DECEMBER

Professor Dan Li
Department of Materials
Engineering, Monash
University

"Colloidal approach to
graphene-based materials"

12 DECEMBER

Benjamin Robotham
School of Chemistry,
University of Melbourne

"Photochemistry of
Photosynthetic Mimics", PhD
Swangsong

17 DECEMBER

Steven Barrow
Bio21 and School of
Chemistry, University of
Melbourne

"Single Particle Spectroscopy
of Self-Assembled Gold
Nanostructures", PhD
Swangsong

PUBLICATIONS 2012

- Abrahams BF**, Abrahams CT, Haywood MG, Hudson TA, Moubaraki B, Murray KS & Robson R. 2012. 3d-Metal derivatives of the [Cu(I)(SO₃)₄]⁷⁻ ion: structure and magnetism. *Dalton Transactions*. 41 : 4091-4099.
- Abrahams BF**, Bond AM, Thanh HL, McCormick L, Nafady A, Robson R & Nguyen V. 2012. Voltammetric reduction and re-oxidation of solid coordination polymers of dihydroxybenzoquinone. *Chemical Communications*. 48 : 11422-11424.
- Abrahams BF**, Elliott R, Hudson TA & Robson R. 2012. A new type of 3D [(M-II)(2)(TCNQ(-II))(3))(2-) coordination network with spacious channels of hexagonal cross-section generated from TCNOH(2). *CrystEngComm*. 14 : 351-354.
- Chen X, Li H-X, Zhang Z-Y, Zhao W, Lang J-P & **Abrahams BF**. 2012. Activation and amplification of the third-order NLO and luminescent responses of a precursor cluster by a supramolecular approach. *Chemical Communications*. 48 : 4480-4482.
- Hawes CS, Babarao R, Hill MR, White KF, **Abrahams BF** & Kruger PE. 2012. Hysteretic carbon dioxide sorption in a novel copper(II)-indazole-carboxylate porous coordination polymer. *Chemical Communications*. 48 : 11558-11560.
- Anandan, Lee, Yang, **Ashokkumar M** & Wu . 2012. Sonochemical synthesis of Bi₂CuO₄ nanoparticles for catalytic degradation of nonylphenol ethoxylate. *Chemical Engineering Journal*. 183 : 46-52.
- Bernaudo Shaw N, Bruno A, Bianchi CL & **Ashokkumar M**. 2012. Graphene oxide based Pt-TiO₂ photocatalyst: ultrasound assisted synthesis, characterization and catalytic efficiency. *Ultrasonics Sonochemistry*. 19 : 9-15.
- Cavaliere F, Zhou M, Tortora M, Lucilla B & **Ashokkumar M**. 2012. Methods of preparation of multifunctional microbubbles and their in vitro / in vivo assessment of stability, functional and structural properties. *Current Pharmaceutical Design*. 18 : 2135-2151.
- Chandrapala J, Martin GJO, Zisu , Kentish SE & **Ashokkumar M**. 2012. The effect of ultrasound on casein micelle integrity. *Journal of Dairy Science*. 95 : 6882-6890.
- Chandrapala JJ, Oliver C, Kentish SE & **Ashokkumar M**. 2012. Ultrasonics in food processing - Food quality assurance and food safety. *Trends in Food Science and Technology*. 26 : 88-98.
- Chandrapala JJ, Oliver C, Kentish SE & **Ashokkumar M**. 2012. Ultrasonics in food processing. *Ultrasonics Sonochemistry*. 19 : 975-983.
- Chandrapala JJ, Oliver C, Kentish SE & **Ashokkumar M**. 2012. Use of power ultrasound to improve extraction and modify phase transitions in food processing. *Food Reviews International*. 29 : 67-91.
- Chandrapala JJ, Zisu B, Kentish SE & **Ashokkumar M**. 2012. The effects of high-intensity ultrasound on the structural and functional properties of α-lactalbumin, β-lactoglobulin and their mixtures. *Food Research International*. 48 : 940-943.
- Collis J, Leong T, Novell A, **Ashokkumar M**, Kentish SE, Bouakaz A, Ooi AS & Manasseh R. 2012. Effect of surfactant type on microstreaming velocities around microbubbles. In Ohi CD, Klaseboer E, Ohi SW, Gong SW & Khoo BC(eds), *Proc. 8th International Symposium on Cavitation*. 1-4. Singapore: CAV 2012 Organizers & Research Publishing Services.
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