



THE UNIVERSITY OF  
MELBOURNE

# School of Chemistry ANNUAL REPORT 2010



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# INTRODUCTION FROM THE HEAD OF SCHOOL



*Professor Frances Separovic, Head of School*

In what was an eventful year for the School of Chemistry, Professor Ken Ghiggino's term as Head of School concluded as 2010 began. Ken's 12 years as Head of School saw the introduction of many new initiatives including the Victorian Institute of Chemical Sciences, the Bio21 Institute and major refurbishments of the Masson Building. These changes transformed our research and teaching infrastructure and, together with the changes in our courses brought about by the introduction of the Melbourne Model, have provided Chemistry at Melbourne with many new opportunities. Ken's tenure as Head has been marked by many achievements and he remains a greatly valued member of the academic staff. Thank you Ken for your outstanding service and leadership – the School is deeply grateful.

The year began with a lecture by Nobel Laureate, Ada Yonath, who inspired all with her successes and passion for research. Research continues to be a strength of the School. We performed strongly in Australian Research Council (ARC) grants with eight new successful Discovery Project grants (including Australian Professorial Fellowships to Franz Grieser and Evan Bieske), and two ARC Linkage Infrastructure Equipment Funding awards and two National Health and Medical Research Council project grants. A prestigious ARC Laureate Fellowship was awarded to Paul Mulvaney. The School consistently rates amongst the most successful in the nation for Category 1 competitive research grant funding.

Additional large grants for 2010 included a Victorian Science Agenda Strategic Project Fund award of \$5M for 'Large Area Printed Electronic Materials: Solar Cells for Life', and a \$1.76M dollar grant from Victoria's Sustainable Energy Research and Development fund matched by a \$1.76M dollar grant from the Australian Solar Institute (ASI) to develop new materials. In addition, Wallace Wong was awarded an ASI Post Doctoral Research Fellowship.

The School hosts the ARC Centre of Excellence for 'Free Radical Chemistry and Biotechnology' directed by Professor Carl Schiesser and participates in two other ARC Centres. Associate Professor Spas Kolev is a lead investigator in the Victorian Centre for Aquatic Pollution Identification and Management. Funding for two new initiatives, 'University Analytical Services Unit' and 'Bioconjugations for Chemical Biology', was also awarded in 2010.

Researchers in the School received

recognition for research excellence in 2010. Among the awards received are: the RACI Burrows Medal to Professor Tony Wedd, the Birch Medal to Professor Mark Rizzacasa, the Rennie Memorial Medal to Dr Paul Donnelly, the Biota Award to Dr Spencer Williams, the CS Piper Award to Dr Damien Callahan; a Victoria Fellowship to Dr Michelle Ma; and the JAFIA Award to Associate Professor Spas Kolev. Staff achievement was also recognized by a Vice-Chancellor's Award for Outstanding Contribution to Ms Sioe See Volaric.

Building renovations continued in 2010. The Level 2 teaching laboratories and the Resonance Lab were completed in time for the commencement of the 2010 teaching year. Graduates from the 1960s visited the School in August and toured the new laboratories, which replaced those used by our alumni. Funding was secured and work started on the Level 3 teaching laboratories, which will be in use for Semester 1, 2011.

New third year subjects were introduced in 2010 and the first of our new MSc students graduated. PhD enrolments are strong with an extremely gratifying 27 PhD completions in 2010. The Chemistry Outreach Program has been a huge success. In a landmark milestone for the School, Mr Mick Moylan presented Chemistry to our 100,000th school student. The School continues to perform well in teaching, research and engagement in 2010 and I thank all members of the School for their support. 2011 promises to be a busy year as we start work on new research laboratories on Level 3 in the East Wing and prepare to celebrate the International Year of Chemistry.

A handwritten signature in cursive script that reads "Frances".

**Professor Frances Separovic**

# STAFF

## Academic

### Head of School

Frances Separovic

### Professors

Ken Ghiggino  
Franz Grieser  
Robert Lamb  
Richard Alfred O'Hair  
Mark Antony Rizzacasa  
Carl Herbert Schiesser  
Anthony Gordon Wedd

### Associate Professors and/or Readers

Brendan Francis Abrahams  
Muthupandian Ashokkumar  
Evan Bieske  
Michelle Louise Gee  
Craig Hutton  
Spas Dimitrov Kolev  
Trevor Alexander Smith  
Jonathan Michael White

### Senior Lecturers

Stephen Peter Best  
Colette Boskovic  
Rachel Caruso  
Paul Donnelly  
Uta Wille  
Spencer John Williams

### ARC Federation Fellows and Professors

Paul Mulvaney

### Laureate Professor

Andrew Bruce Holmes

### Future Generation Fellows

Rachel Caruso  
John Gehman

### ARC Australian Postdoctoral Fellow

George Khairallah

### ARC Australian Postdoctoral Fellows

Linda Feketeova  
Elizabeth Krenske  
Evan Moore

### Centenary Fellow

Hadi Lioe

### Tutors

Penelope Commons  
Vicky-June Ellis  
Sonia Horvat

### Chemistry Outreach Fellow

Michael Moylan

## Research Associates

Neppolian Bernaudshaw  
Dehong Chen  
Daniel Dias  
Christopher Dean Donner  
Jitte Flapper  
Catrin Goeschen  
Xiaotao Hao  
Tim Hudson  
David John Jones  
Matthias Karg  
Yvonne Kavanagh  
Anthony Morfa  
Christopher Ritchie  
Marc Antoine Sani  
Colin Skene  
Michelle Taylor  
Hemayet Uddin  
Hung Si Vo  
Huabin Wang  
Zhiguang Xiao  
Meifang Zhou  
Maria Ines Almeida  
Janage Chandrapala  
Viktoras Dryza  
James Hickey  
Liisa Hirvonen  
Irving Liaw  
Michelle Ma  
Dana Morgan  
Lachlan McKimmie  
Tich Lam Nguyen  
Marta Redrado Notivoli  
Tim Quach  
Christine Schieber  
James Ward  
Alex Wu  
Su Wan Yap  
Yanlin Zhang

## Honorary Appointments

### Emeritus Professors

Donald William Cameron  
Francis Patrick Larkins

### Professorial Fellows

Robert Cattrall  
Roger Francis Martin  
Richard Robson  
John Wade  
Robert Oliver Watts

### Principal Fellows

Ronald Cooper  
William David McFadyen  
Peter McTigue  
Geoffrey Scollary  
Peter James Thistlethwaite  
Peter Tregloan  
Charles Young

## Senior Fellows

Robert Craig  
Donald Neil Furlong  
Valda May McRae

### Fellows

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

### Visitors

Dr Tobias Bender, Phillips-Universitat, Marburg, Germany  
Dr Jose Gonzalez Garcia, University of Alicante, Spain  
Dr Shigehiro Kagaya, University of Toyama, Japan  
Dr Tilman Lechel, Freie Universitat Berlin, Germany  
Dr Laura Micheli, University of Rome, Italy  
Associate Professor Matthew Paige, University of Saskatchewan, Canada  
Professor Peter Seeberger, Max-Planck Institute for Colloids and Surfaces, Germany  
Professor Will Skene, University of Montreal, Canada  
Dr Hermin Sulistyarti, University of Brawijaya, Indonesia

## Professional

Margaret Anderson  
Marino Artuso  
Renee Beale  
Vicki Burley  
Christine Callahan  
Monalisa D'Souza  
Fran Dynan  
Gregory Ellis  
Jed Fraser  
Robert Gable  
Les Gamel  
Sue Hickey  
Ross Lineham  
Brendan Mangan  
Richard Mathys  
Bryan McGowan  
Alf Meilak  
Elizabeth Mills  
Peter Mills  
John Nuske  
Des Odgers  
Charlie Penman  
Lachlan Pollock  
Marg Ross (Business Manager)  
Craig Sanders  
Jennifer Scott  
Doug Taylor  
Joe Tyler  
Sioe See Volaric

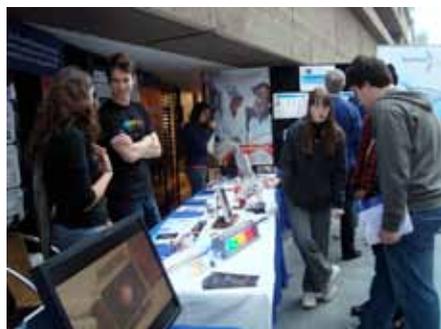
## Light-sensitive ink to power households

New research led by the School of Chemistry, University of Melbourne, may provide a solution to Australia's environment friendly energy dilemma.

## RACI Awards to Members of the School

Hearty congratulations to the following members of the School who received the following awards at the Royal Australian Chemical Institute (RACI) Award night on 12 November:

- Dr Paul Donnelly, the Rennie Memorial Medal
- Dr Spencer Williams, co-winner of the Biota Award for Medicinal Chemistry
- Dr Paul Donnelly, the Rennie Memorial Medal
- Andrew Tilley, the Jim O'Donnell International Travel Award
- Joey Yeo, the Masson Memorial Scholarship Prize
- Dr Damien Callahan, the C.S. Piper Award



Open Day 2010 at Bio21 Institute

## Paul Mulvaney, Australian Laureate Fellow

Congratulations to Professor Paul Mulvaney, School of Chemistry, on award of a prestigious ARC Laureate Fellowship. Paul's project area is entitled 'Molecular Plasmonics: from Single Electrons to Quantum Catalysis and Optical Logic Gates'. Paul was previously an ARC Federation Fellow in the School. Well done Paul!

## Vice-Chancellor's Award for Outstanding Contribution awarded to Sioe See Volaric

Congratulations to Sioe See Volaric who received a Vice-Chancellor's Award for Outstanding Contribution for outstanding service and client focus.

## Printing Solar Cells: A Manufacturing Propositions for Victoria funded by SERD 2 and ASI

A consortium led by Andrew Holmes, David Jones and Ken Ghiggino from Chemistry was awarded \$1.76M as a SERD 2 project by the Victorian Government DPI and an additional \$1.76M by the Australian Solar Institute.

## VSA Strategic Project Fund awards \$5M for Large Area Printed Electronic Materials: Solar Cells for Life

A new generation of cheaper, lighter, printed solar cells could soon be a reality thanks to a \$5 million grant from the Victoria's Science Agenda Strategic Project Fund awarded to Professor Andrew Holmes, Dr David Jones and Professor Ken Ghiggino.

Researchers from the University of Melbourne, CSIRO and Monash University, have teamed up with industry partners including BlueScope Steel, Securrency International, Innovia Films and Robert Bosch South East Asia to form the Victorian Organic Solar Cell Consortium (VICOSC). The \$5 million grant is matched by a cash investment of \$5 million from the consortium partners for a total project value of \$10 million.

The Consortium has developed a printable light-sensitive ink that can convert sunlight into energy, potentially opening the door to inexpensive, mass produced solar panel manufacturing. This project will test the efficiency and durability of the new generation organic solar cell ink and make the technology commercially available by developing large scale print runs to deliver more efficient, longer lasting devices.

## New initiatives from SRE funding

The School has been successful in funding of two projects for a total of \$290k of SRE Implementation Funds:

Rob Lamb and Spas Kolev: "University Analytical Services Unit", and

Spencer Williams, Paul Donnelly and Paul Mulvaney: "Bioconjugations for Chemical Biology" also received funding.

## Victoria Fellowship awarded to Michelle Ma & Matthew Hill

Congratulations to Dr Michelle Ma, post-doctoral research fellow in the Donnelly group, who was awarded a prestigious Victoria Fellowship at Government House on 13 Sep 2010. Michelle will be working at

St Thomas's Hospital and Kings College London using some of her compounds in cancer research. Dr Matthew Hill, a honorary fellow in the School, was also an awardee. Matthew will visit the University of Minnesota to do further work on metal organic frameworks.

## Wallace Wong awarded ASI Post Doctoral Research Fellowship

Congratulations to Dr Wallace Wong from the Holmes lab who has been awarded a prestigious post-doctoral fellowship from the Australian Solar Institute (ASI). The ASI is a \$150 M commitment by the Australian Government to support the development of photovoltaic and solar thermal technologies in Australia.

## ECR grants to Lioe and Sani

Congratulations to Dr Hadi Lioe and Dr Marc-Antoine Sani on their success in the University ECR grant awards. Hadi's grant is for 'Disease-relevant biological complexes studied using nanoelectrospray mass spectrometry (nES MS)' and Marco's is for 'The role of the mitochondrial lipid cardiolipin in Alzheimer disease'.

## Grant to Hadi Lioe

Congratulations to Dr Hadi Lioe who was awarded a grant from the ANZ Trustees Medical Research & Technology in Victoria — The William Buckland Foundation. Hadi's application was entitled "A complementary method to study disease related protein complexes".

## David Jones awarded funding for printed polymer electrodes

Congratulations to David Jones, Holmes Group in the School of Chemistry based at the Institute who was awarded funding via the Australian Academy of Science Australia-Germany Researcher Mobility. David is the Australian Lead Project Manager for the collaborative research project 'Printed polymer electrodes for applications in flexible electronics' with a German team led by Project Manager Dr Alexander Colsmann from the Karlsruhe Institute of Technology.

## ARC awards for 2011

Members of the School were awarded over \$3M in Discovery grants in this year's ARC awards. The following staff were successful applicants: Muthupandian Ashokkumar, Stephen Best, Evan Bieske, Colette Boskovic, Rachel Caruso, Michelle Gee, Franz Grieser, Craig Hutton, George Khairallah, Richard O'Hair, Mark Rizzacasa and Frances Separovic. In

addition, Evan Bieske and Franz Grieser were both awarded Australian Professorial Fellowships, a 'remarkable feat'.

## **ARC LIEF Grants to Mulvaney and Separovic**

Congratulations to Prof Paul Mulvaney and collaborators who were awarded \$366,384 toward 'The Victorian integrated plasmonics facility'.

Congratulations also to Prof Frances Separovic and colleagues who were awarded \$600,000 for 'Advanced characterisation of materials by nuclear magnetic resonance'.

## **Augustine Doronila receives Crawford Fund Training Award**

Dr Augustine Doronila, from the Kolev lab in Chemistry, received support from the Crawford Fund to hold a Training Workshop on 'Phytoremediation technology for effective post-mining closure strategies' to be held in the Philippines. The Crawford Fund's mission is to increase Australia's engagement in international agricultural research, development and education for the benefit of developing countries and Australia.

## **Spas Kolev leads team conducting research on Novel Chemistries**

Congratulations to Assoc. Prof. Spas Kolev who in the newly launched Victorian Centre for Aquatic Pollution Identification and Management (CAPIM), will lead a team conducting research on Novel Chemistries: Analytical Methods and Probes.

## **George Khairallah receives Academy of Science International Science Linkages Grant**

Congratulations to Dr George Khairallah, from the School of Chemistry was awarded a grant to undertake important international collaborative research under the International Science Linkages — Science Academies Program 2010.

## **2010 Vanderbilt Mobility Research Grant to John Gehman and Hadi Lioe**

Congratulations to Dr John Gehman and Dr Hadi Lioe who were announced as the winners of the 2010 Vanderbilt Mobility Research Grants.

## **Burrows Medal for Tony Wedd**

The Inorganic Award of the RACI, the Burrows Medal, was presented to Tony Wedd as part of the 39th International

Conference on Coordination Chemistry in Adelaide from 25th to 30th July 2010. The Award is based on consideration of candidates' scientific work published in the past 10 years, together with other evidence of standing in the international community.

## **Birch Medal for Mark Rizzacasa**

Congratulations to Professor Mark Rizzacasa on Award of the Birch medal for 2010. The A.J. Birch Medal is the premier award of the Organic Division of the Royal Australian Chemical Institute. Mark will present the Birch Lecture at RACI 2010 Convention in Melbourne 4-8 July 2010.

## **JAFIA Award for Spas Kolev**

Congratulations to Spas Kolev who was announced as the recipient of the FIA Award by the Japanese Association for Flow Injection Analysis President, Tadao Sakai. The award is in recognition of his outstanding contribution to the FIA/SIA research field.

## **Dulux Award to Tim Connell**

Congratulations to Timothy Connell who was this week chosen as the winner of the 2010 Dulux Australia Award.

## **Linda Chan wins Young Investigator Award in Kyoto**

Congratulations to Linda Chan, PhD student with Prof John Wade and Frances Separovic, who received a Young Investigator Award at the International Peptide meeting (5th IPS) held in Kyoto 4-9 December 2010.

## **Poster prize for Caruso Group**

Congratulations to PhD student Maryline Chee Kimling for receiving a Best Poster Award at the International Sol-Gel Society Summer School, held in Clermont Ferrand, France. Maryline's poster detailed her work on the synthesis of porous metal oxide beads using alginate as a template.

## **Award for Wedd group member**

Congratulations to Lee Xin Chong, a PhD student in the Wedd group, who was awarded the best oral presentation award at the 9th annual Melbourne Protein Group student symposium on 22nd July 2010 at La Trobe University.

## **Poster Prize for Lachlan McKimmie**

Congratulations to Dr Lachlan McKimmie from the Smith group who was the winner of the best poster presentation at the 6th Asian Photochemistry Conference held in Wellington, New Zealand.

## **Publications from the Advanced Porous Materials Group:**

- a "Hot Article" in the Journal of Materials Chemistry (Xingdong Wang),
- a manuscript in the top 10 most accessed articles from ACS Nano during the third quarter of 2010 (Dehong Chen, Fuzhi Huang and collaborators), and
- a manuscript in the top 10 most accessed articles from Chemistry of Materials during the third quarter of 2010 (Glenna Drisko and collaborators).

## **Angewandte Chemie paper for Boskovic Group**

Research from Colette Boskovic's group has been featured in a recent article in Angewandte Chemie entitled "Terbium Polyoxometalate Organic Complexes: Correlation of Structure with Luminescence Properties" (Angew. Chemie. Int. Ed. 2010, 49, 7702-7705). The paper describes the synthesis, structure and photophysical investigation of some luminescent hybrid polyoxometalates.

## **Chem Communications cover for Donnelly group**

Research from Sin Chun Lim and Brett Paterson from Paul Donnelly's research group featured on the cover of Chemical Communications, issue 30, 2010. The research describes a new molecular agent that has the potential to assist in the non-invasive diagnostic imaging of Alzheimer's disease.

## **Front Cover in European Journal of Inorganic Chemistry for Young Group**

Research by Charles Young's group has featured on the cover of Issue 21 of the European Journal of Inorganic Chemistry. The research was performed by PhD students Victor Ng and Lyndal Hill, postdoc Dr Michelle Taylor and colleague Jonathan White.

## **Angewandte Chemie papers for Robson-Abrahams group**

Research from the Robson-Abrahams group has been featured in recent Angewandte Chemie papers. The first paper, designated a "hot-paper" by the Editors, reports a novel Li-based ionic network that is able to sorb hydrogen (Angew. Chem. Int. Ed. 2010, 49, 1087) while the second paper describes some tetrahedral cages which formed part of Nick FitzGerald's PhD work (Angew. Chem. Int. Ed. 2010, 49, 2896). A third

paper representing a collaboration between Prof. Jian-Ping Lang's group from Suzhou University in China and Brendan Abrahams (Angew. Chem. Int. Ed. 2010, 49, 4767) reports the results of a photo-induced single crystal-to-single crystal transformation in which new covalent bonds are formed.

## Front cover article in Crystal Growth and Design for MSc student Robert Elliott

Robert Elliott, a Masters student in the Robson-Abrahams group has had his research work, along with work undertaken by Dr Tim Hudson, featured, on the front cover of the July issue of the American Chemical Society journal, Crystal Growth and Design.

## Melbourne Chemistry research on wine highlighted

Research by Ghiggino group postdoctoral fellow Daniel Dias was highlighted in the June issue of The Grape and Wine Research Development Corporation's newsletter 'R&D@Work'.

## Chem. Commun. front cover article for Ghiggino group

Research of Prof. Ghiggino's photochemistry group was featured on the front cover of the Royal Society of Chemistry journal, Chemical Communications (Chem. Commun., 2010, 46, 4881). The work describes the unusual melt induced fluorescence from a simple naphthalene diimide derivative.

## JACS article for Caruso Group

Members of the Advanced Porous Materials Group, Dehong Chen, Lu Cao and Rachel Caruso, published an article in the Journal of the American Chemical Society: Synthesis of monodisperse mesoporous titania beads with controllable diameter, high surface areas, and variable pore diameters (14-23 nm), J. Am. Chem. Soc. 2010, 132(12), 4438-4444.

## Nature Chemical Biology article for Williams Group

Dr Zoran Dinev from the Williams group, as part of a major international collaboration with Prof Gideon Davies (University of York), Prof Harry Gilbert (University of Georgia), Dr Nicola Smith (Newcastle University) and Dr Aloysius Siriwardena (CNRS-France), have published an article in Nature Chemical Biology (2010, 6, 125-132), profiling a range of enzymes common to gut bacteria. The 3D structures of the several glycoside hydrolases, in complex

with an inhibitor prepared in the Williams group, provide insight into the specificity, mechanism and conformational itinerary of catalysis and add to our growing understanding of our bacterial symbionts and the complexities of human digestion.

## JACS article for Wedd Group

The full story behind the image that appeared in the School Annual Report 2008, by Dr Zhiguang Xiao and PhD students Karrera Djoko and Lee Xin Chong from the Wedd group, has been published in J. Am. Chem. Soc. The article documents how an enzyme containing catalytic (nutrient) copper is involved specifically in resistance against excess toxic copper.

## The Science of Sausages

An article by Mick Moylan, Chemistry Outreach Fellow was featured in The Age Melbourne Magazine on Friday 26th November.

## Free radical

See article in LifeScientist (Nov/Dec 2010, pp24-26). Dr Uta Wille bridges the gap between chemistry and biology and is bringing her unique insight to bear on the role played by free radicals in damaging DNA.

## Free radicals and health educational initiative

Congratulations to Dr Renee Beale, who has received a Vice-Chancellor's Engagement Award on 1 October 2010 for the Free Radical Centre's educational video project with Aquinas College and Quit Victoria.

## Chief Scientists' Visit

The Chief Scientists of Australia, Victoria and Western Australia visited the School of Chemistry on 2 December 2010 to learn more about the photovoltaic project from Dr David Jones.



Chief Scientist of Australia

## Chemistry and Art Conservation

Prof. Carl Schiesser and Dr Stephen Best, researchers from the School of Chemistry are involved in art conservation. Their work is discussed in the Melbourne Voice.

## Our chemical cultural heritage: Hartung (1893-1979)

During the time of Ernst Johannes Hartung, the dream of a new purpose-built building for Chemistry at the University of Melbourne was realised. See third and final article on the history of Chemistry at Melbourne by Petronela Nel in Sep issue of Chemistry in Australia pp. 30-32.

## History of Chemistry at Melbourne

The May issue of Chemistry in Australia (pp 27-28) had an article about our 'Chemical cultural heritage: Masson & Rivett (1858-1961)' by Petronela Nel

## Organic Photovoltaic Research on Cover of C&EN

The front cover of Chemistry and Engineering News (C&EN) 23 Aug 2010 shows Scott Watkins through a transparent organic photovoltaic film. The cover story on 'Power from Plastics' includes interviews with David Jones and Wallace Wong from the Holmes group. C&EN reaches over 161,000 primary subscribers.

## Generating and Transforming New Industries — Printable Solar Cells

Work from the Holmes group and one of our former PhD students, Georgia McCluskey, on new polymers for solar cells featured in CSIRO news.

## Bringing Science to Life

The Free Radical Chemistry Centre in the School of Chemistry hosted 24 students from Aquinas College over four weeks to explore the environmental and health impacts, as well as the productive uses, of free radicals.

## Using plants to clean up contaminated water, soil

Dr Augustine Doronila from the Kolev group is featured in a full page article in the Philippine Daily Inquirer (18/7/2010), the widest distribution broadsheet English language newspaper in the Philippines. The feature in 'Talk of the Town' is on phytoremediation, environmental chemistry and the announcement of a new nickel hyperaccumulator in the Philippines and encapsulates some of the concepts of

Augustine's research and developmental work.

## **Chemistry in Australia interviews Frances Separovic**

In recognition of her professional commitment and research excellence, Frances Separovic received the Robertson Award at the December 2009 Meeting of the Australian Society for Biophysics in Ballarat.

## **School of Chemistry Researchers Present at the 39th International Conference on Coordination Chemistry**

Researchers from the School of Chemistry were well represented at the recent 39th International Conference on Coordination Chemistry held in Adelaide, 25-29 July 2010.

Professor Tony Wedd was an invited plenary lecturer and presented with the Burrows Medal in recognition of his published research in the past 10 years and other evidence of standing in the international community. Dr Paul Donnelly was invited to present a keynote lecture and Drs Colette Boskovic, Evan Moore and Michelle Ma were selected to give oral presentations highlighting their recent research. PhD student Sin Chun Lim (Donnelly group) delivered an oral presentation as a finalist in the Stranks Award (for best postgraduate student presentation). Gojko Buncic (Donnelly/Wedd group) received an award for the best poster presentation.

## **Fresh Scientists 2010**

Congratulations to two of our alumni who are amongst this year's Fresh Scientists: Jacek Jasieniak, CSIRO Molecular and Health Technologies and Colin Scholes, CRC for Greenhouse Gas Technologies.



Peter Pockley

## **Chemistry graduate gets Academy award**

The Australian Academy of Science has awarded the prestigious 2010 Academy Medal to alumnus and science communicator Peter Pockley.

## **Obituary for Professor Emeritus Tom O'Donnell**

Obituary published in The Age newspaper on 7 May 2010.

## **A/Prof Spas Kolev joins Editorial Board of Talanta**

Congratulations to Associate Professor Spas Kolev who joined the Editorial Board of Talanta (Elsevier).

## **Dr Stephen Best joins editorial Board of Radiation Physics & Chemistry**

Congratulations to Dr Stephen Best, who has joined the editorial Board of Radiation Physics and Chemistry as Associate Editor.

## **Professor Richard O'Hair invited to become Assoc. Editor for JASMS**

Congratulations to Richard O'Hair who was invited to become the first southern hemisphere Associate Editor of the leading mass spectrometry journal, The Journal of the American Mass Spectrometry Society. Richard was also included on the cover of the Journal of the American Mass Spectrometry Society for being one of the top contributors. He is included with a distinguished group of scientists and is the only Australian scientist to have made this list.

## **Professor Ken Ghiggino awarded the 2010 Royal Society of Chemistry (RSC) Australasian Lectureship**

Congratulations to Ken Ghiggino who was awarded the 2010 Royal Society of Chemistry (RSC) Australasian Lectureship.

## **Taking Chemistry to our 100,000th Student**

The Chemistry Outreach Program brought one of our active and engaging chemistry activities to our 100,000th school student. The program reaches across Victoria aiming to inspire students from Prep to Year 12 towards careers in the sciences, and show students exciting areas of chemistry.

Our activities give students the opportunity to measure the saltiness of soy sauce, the amount of caffeine in their soft drink or the properties of rare elements. Students

also see explosions, sparks and have an educational excuse to break objects.

More information about the program is available here.

## **Lecture by Nobel Laureate: "The Amazing Ribosome"**

Professor Ada Yonath, from the Weizmann Institute of Science in Rehovot and 2009 Nobel Prize winner for Chemistry, presented a seminar at the School of Chemistry, University of Melbourne. More than 300 people attended the lecture. Ada shared the prize with two other protein crystallographers, V. Ramakrishnan (MRC Cambridge) and T. Steitz (Yale University), for having showed what the ribosome looks like and how it functions at the atomic level. Ribosomes are the components of cells that make proteins from amino acids. Ada is the first woman to become a Chemistry Nobel Laureate since 1964.



Professor Ada Yonath

# SOCIETIES



From left to right: Jessica Holmes, Christian Potzner, Keith White, Julia Baldauf, Steven Barrow, Joe Varga

## Chemistry Postgraduate Society

President: Keith White

Secretary: Steven Barrow

Treasurer: Julia Baldauf

General Committee members: Christian Potzner, Joe Varga, Sarah Jaber, Nick Kirkwood and Jessica Holmes.

### Presidents report

The CPS plays a vital role in keeping a social pulse in the chemistry department, this year the terrific efforts of the committee members were rewarded with the trivia night, annual dinner (held in China town) and Cup day + welcome BBQ's all being successful events attracting attendances of over sixty. The recent addition of semi regular, social drink nights have also been an excellent chance for the split Bio21 and main campus chemists to often mix and will continue in a monthly format in the next year.

In efforts to enhance attendances, participation costs were kept low and a small profit was made at the trivia night, the dinner and social drinks nights were mostly self sufficient. The BBQ's were particularly draining on funds, but the costs were more than made up for by the heartening attendances. Due to a fiscally successful year previously no GSA funding was required this time around, but will be necessary for future functions to be held.

The chemistry department has approximately 90 postgraduate students as well as scores of professional and academic staff, these numbers are encouraging for the CPS to keep the social culture alive.

## Melbourne University Chemical Society

President: Assoc Prof Craig Hutton

Secretary: Assoc Prof Rachel A. Caruso

Treasurer: Dr George Khairallah

Student Representatives:

Gary Beane

Tim Benton

Mohammad Haskali

Lilian Hor

Nicole Rijs

Ellie Yoo

The 2010 lecture series featured 10 presentations, given by high profile Australian and overseas guest speakers.

These presentations covered many different aspects of Chemistry. We thank FB Rice and Co Patent and Trade Mark Attorneys, the Australian Journal of Chemistry, the Royal Australian Chemical Institute and LasTek for their generous support.

## MUCS Seminar Series

Coordinator: Rachel Caruso

### March 17

Professor Henning Hopf, Technical University Braunschweig, Germany

Interactions between Functional Groups:  
Lessons from Cyclophanes

### March 24

Professor Peter Seeberger, Max Planck Institute of Colloids and Interfaces, Germany

Carbohydrate-based Vaccines

### May 26

Professor Stephan Förster, University of Hamburg, Germany

Why "nano" in nanocomposites?

### June 16

Professor Neil Greenham, Cambridge University, UK Lastek Lecture

Polymer Solar Cells — Materials, Nanostructures and Printing

### August 4

Professor Jennifer Martin, University of Queensland Lady Masson Lecture

Where do new medicines come from?

### September 8

Professor Peter Sadler, University of Warwick, UK 2010 Selby Fellow

Organometallic anticancer complexes

### October 6

Dr Ian Grey, CSIRO Minerals D. R. Stranks Memorial Lecture

Photoelectrochemical water splitting — a 'holy grail' of chemistry

### October 27

Dr Maree Collis, Lethbridge Wines G. I. Feutrill Memorial Lecture

The Chemistry of Traditional and Technical Winemaking

### November 24

Dr Peter Pockley, Science Writer & Broadcaster Aust J Chem Lecture

Chemistry and Olympic Games Forge an Unusual Career in Science

### December 8

AGM, Assoc Prof Craig Hutton President's Address

Puzzling peptides: a personal perspective

# CHEMISTRY BUILDING REDEVELOPMENT

Major refurbishment of the Chemistry building continued in 2010 as part of the ongoing redevelopment plan approved by the University. Early in the year the new second level teaching laboratories were completed and made available to students. This new area includes a Multimedia Room and substantial student laboratory bench space with modern fume-hood extraction. The refurbished area also contains dedicated laboratories for analytical instrumentation including a resonance laboratory that houses the School's new NMR, EPR and mass spectrometry instruments. Offices and preparation areas for the teaching laboratory staff are also included.

Funding was made available to undertake the third level teaching laboratory refurbishments and these were completed by the end of the year. This area includes a student write-up 'lounge', synthetic laboratory benches and instrument rooms. This stage completes the teaching laboratory refurbishments on the three floors of the Chemistry West building. Funding has also been approved to move forward in 2011 with renovations of the Chemistry East Wing third level synthetic research laboratories and construct the screens that will cover the external fume-hood extraction ducts.



Photo's courtesy of S2F Pty Ltd

# 2010 PRIZES

AWARD DETAILS	RECIPIENT
<b>1ST YEAR PRIZES</b>	
<b>Dwight Prize in 1st Year Chemistry</b> Awarded to an outstanding student in 1st Year Chemistry going on to major in chemistry.	Brendan Ashley Backhouse
<b>EXHIBITION PRIZE IN 1ST YEAR CHEMISTRY</b> Awarded to the student achieving the highest results in first year Chemistry. Does not have to be majoring in chemistry.	Denyse Xinhui Khor
<b>2ND YEAR PRIZES</b>	
<b>C.A. TAYLOR SCHOLARSHIP — CHEMISTRY</b> Conditions: Awarded to an outstanding second year student who intends to major in chemistry.	Merinda Healey
<b>THE HUNTSMAN AUSTRALIA PRIZE</b> Awarded to a second year student proceeding to a major in chemistry in 3rd year.	Merinda Healey
<b>3RD YEAR PRIZES</b>	
<b>J.S. ANDERSON PRIZE</b> Conditions: 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.	Thomas Charles Whitwell
<b>DULUX AUSTRALIA PRIZE IN CHEMISTRY</b> Conditions: The prize is awarded annually to a Chemistry student who has completed a 3rd year of the B.Sc. course and who is enrolled in the B.Sc. (Honours) course in the sections of Organic or Physical Chemistry.	Timothy Connell
<b>FRED WALKER SCHOLARSHIP</b> Conditions: Awarded to a 3rd year student for a 4th year of study in Chemistry in preparation for a Master of Science.	Michael Leeming
<b>JAMES CUMING MEMORIAL SCHOLARSHIP (Major &amp; Minor)</b> 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 and second top Faculty Honours Score of those students <b>going into straight Chemistry Honours</b>	<b>Major:</b> Kimberley McLean
	<b>Minor:</b> Thomas Charles Whitwell



Michael Leeming



Tom Whitwell

# 2010 PRIZES

AWARD DETAILS	RECIPIENT
4TH YEAR PRIZES	
<p><b>THE HUNTSMAN AUSTRALIA AWARD FOR RESEARCH EXCELLENCE</b></p> <p>Conditions: Awarded to students entering a postgraduate course in the School of Chemistry and who have demonstrated excellent research potential in their Honours/Masters/PGDip year.</p> <p>Best research mark</p>	Zalihe Hakki
<p><b>KERNOT RESEARCH SCHOLARSHIP</b></p> <p>Open to candidates who have completed the BSc Honours course.</p>	Timothy Connell
<p><b>THE STANLEY HARVEY PRIZE</b></p> <p>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.</p>	Timothy Connell
<p><b>DIXON RESEARCH SCHOLARSHIP</b></p> <p>Awarded on the basis of fourth year honours results to a student continuing on to a higher degree.</p>	Aaron Brown
<p><b>RONALD RISEBOROUGH PRIZE</b></p> <p>A donation was made in 1959 by students and staff of Chemistry and from Mrs F. Riseborough to perpetuate the memory of Ronald Riseborough.</p> <p>Conditions: The Prize is awarded for the best fourth year research report in Applied Chemistry.</p>	Joey Yeo
POSTGRADUATE PRIZE	
<p><b>THE MONICA ELIZABETH REUM MEMORIAL PRIZE</b></p> <p>A donation was made in 1998 by family, friends and colleagues in memory of Dr Monica Elizabeth Reum.</p> <p>Conditions: Awarded to a person who submits for assessment an outstanding PhD 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 the remainder of the available income in cash.</p>	Sara Kyne
<p><b>THOMAS HEALY AWARD</b></p>	Benjamin Cao Lisa Smith Lee Xin Chong



Zalihe Hakki



Spencer Williams

# CHEMISTRY OUTREACH PROGRAM



The Outreach Program took real-life chemistry activities to the schools of more than 20,000 Prep – Year 12 students in 2010, engaging these students in chemistry and supporting their teachers with interesting, curriculum relevant activities and professional development sessions.

Our 'Labs in a Box' program of portable, self-contained kit of instruments and materials for senior secondary chemistry continues to grow and attract funding. The kits, which allow teachers in rural and remote locations to run hi-tech, curriculum relevant activities in their classrooms, will continue to expand thanks to a successful grant application to the Collier Fund.

We also increased the amount of chemistry we did with the general public, and particular highlights were the chocolate chemistry program From Bean to Bar which we ran for shoppers at the Queen Victoria Market during National Science Week, and repeated at the Questacon Science Museum in Canberra as part of their Christmas celebrations. Participants tasted and learned about some of the important chemical species in cocoa and chocolate and the important chemical steps in the chocolate-making process. Our thanks go to chocolatiers at William Angliss Institute of TAFE for making truffles with us at the market and also to National Science Week for funding.

For an older audience, we have developed Radical Wine which we took to the Queensland Museum in Brisbane and also to Questacon to take people through a wine "tasting and testing". The events were supported by wineries from South East Queensland and the Canberra regions who offered tastings of their product. We offered a chance to measure some of the differences between wine varieties and look at their chemical composition. Thanks to the ARC Centre of Excellence for Free Radical Chemistry and Biotechnology for co-developing and presenting these activities.

Our outreach activities show students a mixture of new research, fundamental chemical principles and the chemistry of everyday life. We hold these activities on the University of Melbourne campus and at schools throughout Victoria. In 2010, amongst other events, we hosted the programs listed below.

## Chemistry Olympiad Training Program 2010

The Olympiad Training Program was held 5.30 -7.30 pm on Tuesdays. The 12 week program aims to introduce high-achieving, interested Year 11 Chemistry students to material that would enable them to sit for the National Qualifying Examination for the Chemistry Olympiad. The prestigious Olympiad program is highly selective. Of 1500 Australian students who undertake the examination in late August throughout Australia, about 35 will be selected for an intensive chemistry course for three weeks in January 2011 and then just 4 students will be chosen to represent Australia in the Chemistry Olympiad during 2011.

A total of 25 students were registered and most attended each week with occasional absences due to school commitments. The student evaluations indicated that participants found the lectures most helpful in introducing them to university life and methods of learning, as well as preparing them for Year 12 Chemistry and the National Qualifying Examination for the Chemistry Olympiad.

The students came from a variety of schools in Melbourne, including Government, Catholic and Independent, for a modest fee of \$330 for 24 hours of direct tuition as well as indirect assistance via homework, solutions and ChemCAL.

Associate Professor David McFadyen and Penny Commons present this program annually.



Mick Moylan explaining the states of matter, as drawn by Edward from Grade 1 at St Albans East Primary School

# CHEMISTRY OUTREACH PROGRAM



*Demonstrating at Melbourne Schools*



## CEA November Chemistry Lectures 2010

The Chemistry Education Association, in conjunction with the School of Chemistry, University of Melbourne, present an in-service day of interest to Chemistry teachers each year in November. The morning lectures highlight some exciting recent developments and applications of Chemistry. The afternoon workshops are practical laboratory activities that have direct links to the classroom.

The 2010 November Lectures were fully booked and from the feedback it was clearly a great success. 98 people registered and all enjoyed three lectures during the morning session covering the latest research in Chemistry, with titles of Total synthesis: Constructing Nature's Molecules; Computers and Chemistry: Engaging ways to explore our chemical world; and Catalysis in Green Chemistry. These lectures provided stimulating stories and anecdotes for teachers to use when introducing topics during their VCE Chemistry classes. They enable students to see where a degree majoring in Chemistry will lead.

During the afternoon session, teachers attended an interactive/practical activity workshop for a two hour session. Teachers had selected this workshop from a list of four activities that were offered. These sessions were chosen to enhance and extend teachers' knowledge in areas that relate directly to the classroom. Reports from each of these sessions indicated that teachers were provided with useful and stimulating material both for the extension of their knowledge as well as ideas that will be of use in future lessons.



# ALUMNI FUNCTION 2010

Honours and PhD alumni who graduated between 1960 and 1969 were back on campus in August for a Reunion. There was lively conversation over lunch as they shared memories, exchanged stories of their lives since graduation and reconnected with past staff of the School. During the lunch, Australian Research Fellow Rachel Caruso gave a short presentation on new technologies she is developing with CSIRO that will be applied in fuel generation, energy conversion and environmental remediation.

Following the lunch, most alumni took a tour of the new laboratories and teaching spaces in the Chemistry building with the Head, Professor Frances Separovic and immediate past Head, Professor Ken Ghiggino. And of course, there was the obligatory visit to the Masson Theatre.

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

<http://www.chemistry.unimelb.edu.au/community/AlumniFunction2010.html>

<http://www.unimelb.edu.au/alumni/>

<http://alumni.online.unimelb.edu.au/s/1182/start.aspx?sid=1182&qid=1&pgid=61&cid=160>



# SUBJECTS

## FIRST YEAR

Director: Spencer Williams

- 610-150 Chemistry for Biomedicine  
Spencer Williams
- 610-171 Fundamentals of Chemistry  
Spencer Williams
- 610-101 Chemistry 1  
Spencer Williams
- CHEM10004 Chemistry 2  
Spencer Williams

## SECOND YEAR

Director: Stephen Best

- 610-283 Reactions and Synthesis  
Stephen Best
- CHEM20011 Environmental Chemistry  
Spas Kolev
- CHEM20019 Practical Chemistry  
Muthupandian Ashokkumar
- CHEM20020 Structure and Properties  
Stephen Best

## THIRD YEAR

Director: Uta Wille

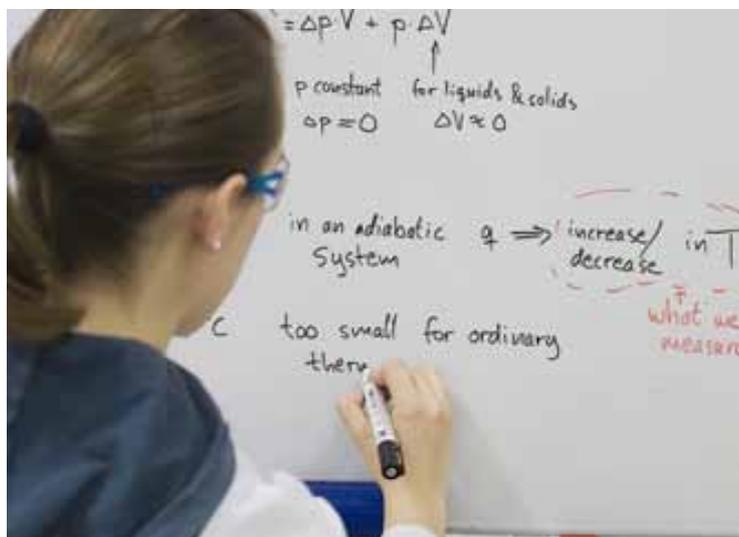
- 610-352 Advanced Practical Chemistry  
Trevor Smith
- 610-353 Reactivity and Mechanism  
Uta Wille
- 610-360 Analytical and Environmental Chemistry  
Spas Kolev
- CHEM30013 Chemical Research Project  
Ken Ghiggino
- CHEM30014 Specialised Topics in Chemistry B  
Uta Wille
- CHEM30017 Specialised Topics in Chemistry A  
Uta Wille

## HIGHER YEARS

- 610-400 Honours  
Craig Hutton
- 610-500 Masters  
Craig Hutton

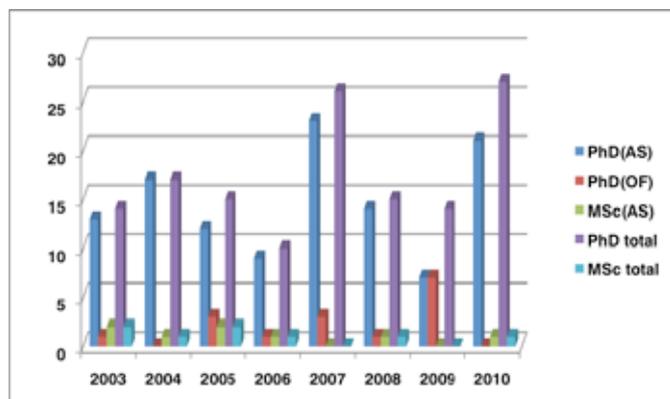


Mr Alf Meilak



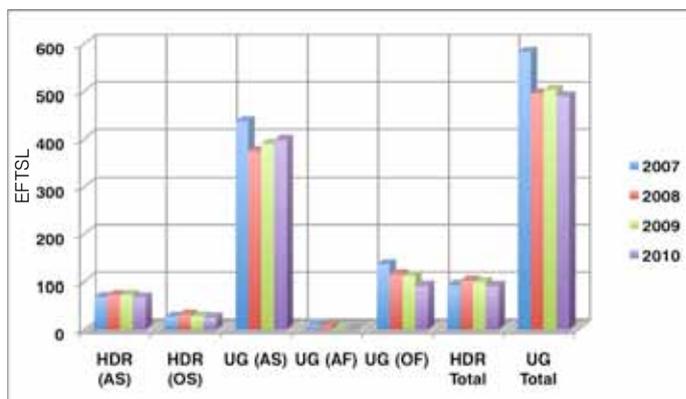
# KEY TEACHING AND LEARNING STATISTICS

## Research completions by year



AS: Australian Subsidised Students  
OS: Overseas Full-Fee Students

## Teaching Load



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

## Quality of Teaching scores

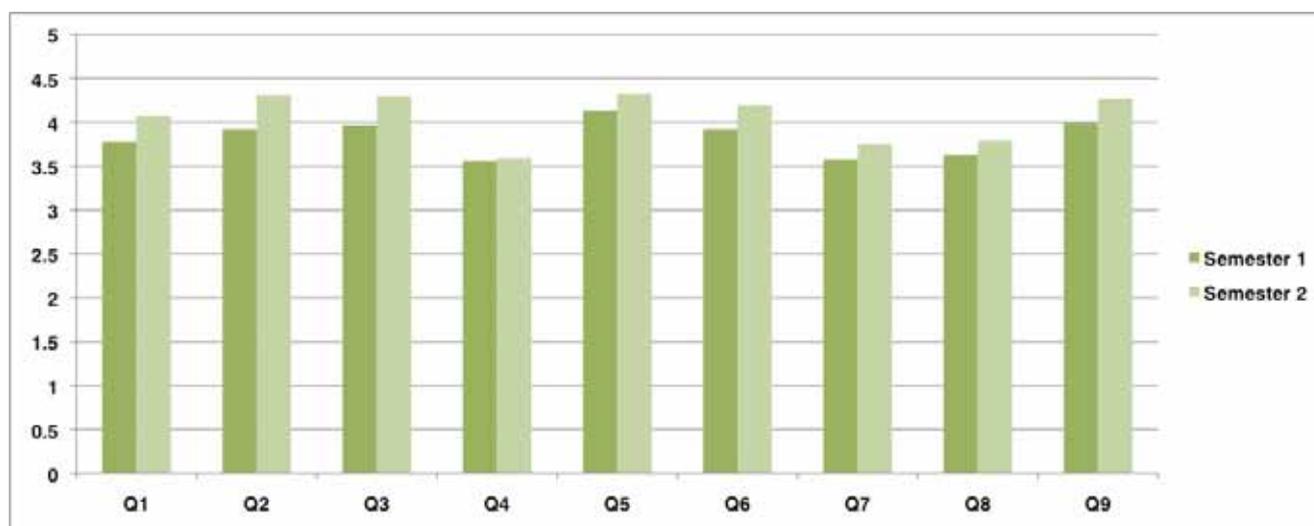
The Quality of Teaching survey provides feedback from undergraduate and postgraduate coursework students on their perceptions of the quality of teaching and learning experience for each subject in which they are enrolled.

This graph also shows results for undergraduate breadth subjects. The Student Feedback Questionnaire has been used throughout the University since 1994 with little variation in the questions over the period.

Surveys are mandatory in all 'taught' subjects in all semesters. Students are asked whether they strongly agree (5); agree (4); agree nor disagree (3); disagree (2); or strongly disagree (1) with the following statements.

1. I had a clear idea of what was expected of me in this subject.
2. This subject was well taught.

3. This subject was intellectually stimulating.
4. I received helpful feedback on how I was going in my subject.
5. In this subject, teaching staff showed an interest in the academic needs of the students.
6. I felt part of a group of students and staff committed to learning in this subject.
7. There was effective use of computer-based teaching materials in this subject.
8. Web-based materials for this subject were helpful.
9. Overall satisfaction with the quality of the learning experience in this subject.



# RESEARCH HIGHER DEGREE STUDENT COMPLETIONS



## Adam Robert Brotchie

Acoustic cavitation in dual frequency ultrasound fields

## Benjamin Isaiah Martin Cebon

Studies towards the biomimetic total synthesis of dihydrooxepin-containing epipolythiodiketopiperazine natural products

## Nikko Yik On Chan

Nano-assembly of light emitting polymer films

## Quentin Isaac Churches

Synthesis of highly functionalised amino acids

## Glenna Lynn Drisko

Template synthesis and surface modification of metal oxides

## John Thomas Feutrill

Asymmetric total synthesis of crocacinins A-D

## Nicholas John Fitzgerald

Supramolecular assemblies from catechol-based ligands

## Joel Francis Hooper

Studies towards the synthesis of the eunicellins

## Woan Mei Kok

Synthesis of covalently linked AB<sub>2</sub> peptide dimers: a possible neurotoxic species?

## Sara Helen Kyne

Understanding intramolecular radical chemistry: acyl and alkoxy-carbonyl radical cyclisation reactions

## Emma Elizabeth Lees

Preparation and characterisation of biocompatible semiconductor nanocrystals

## Barbara Tsz Yam Li

Synthetic studies towards the synthesis of clogentin C

## Jiufu Lim

Brownian rotary motors and linear microfluidics

## Michelle Therese Ma

Coordination of transition metals to peptides: (i) Ruthenium and palladium metal clips that induce pentapeptides to be alpha-helical in water; (ii) Synthesis of peptides incorporating a cage amine ligand for chelation of copper radioisotopes.

## Nathan Wesley McGill

Synthesis of oligogalactosides related to arabinogalactan proteins: the use of 2,6-disubstituted benzoates as stereo directing neighbouring groups

## Voula Mitsakos

Inhibitors of dihydrodipicolinate synthase: search for a new class of antibacterial agents

## Zubaidah Ningsih

The interaction kinetics of a melittin derivative with a phospholipid membrane

## Chengxue Qin

Investigation of the mechanism of the cardioprotective effect of flavonols

## Ina Sambor

Radicals masquerading as electrophiles: exploring frontier orbital interactions in free radical reactions

## Fazel Shabanpoor

Design and development of novel analogues of the human insulin-relaxin superfamily members, insulin-like peptide 3 and relaxin-3

## Maree Kathleen Staples

Tandem homolytic addition/substitution chemistry for the synthesis of selenium-containing heterocycles

## Kristine Joy Wei Mei Tan

Thiyl radical reactions with alkynes in the absence and presence of oxygen

## Boon Mian Teo

Ultrasonic polymer synthesis

## Sammi Ghebremedhin Tsegay

Total synthesis of citrafungin A

## Xingdong Wang

The synthesis of noble metal/TiO<sub>2</sub> composites via templating techniques and application of the composites in photocatalysis reactions

## Su Wan Yap

Synthesis and biological analysis of targeted flavonols for the prevention of reperfusion injury

## Shinn Dee Yeoh

Application of structural correlation principles to Wagner-Meerwein rearrangement of nopinol and Beckmann rearrangement of cyclohexanone oxime derivatives

## Matthias Zimmerman

Molecular characterisation of novel copper and zinc transporters

# RESEARCH FUNDING FOR 2010



The School performed strongly in ARC grants with 8 new successful ARC Discovery Project grants (including 2 Australian Professorial Fellowships), 2 NHMRC Project grants and 2 ARC LIEF equipment infrastructure applications. An ARC Laureate Fellowship was awarded to Paul Mulvaney. HERDC totalled over \$7.8M in 2010.

Further large grant funding included a VSA Strategic Project Fund award of \$5M for 'Large Area Printed Electronic Materials: Solar Cells for Life', and \$1.76M dollar grant from Victoria's Sustainable Energy Research and Development fund matched with another \$1.76M dollar grant from the Australian Solar Institute (ASI) to develop new materials. In addition, Wallace Wong was awarded an ASI Post Doctoral Research Fellowship.

The School hosts the ARC Centre of Excellence for 'Free Radical Chemistry and Biotechnology' directed by Carl Schiesser and participates in 2 other ARC Centres. Spas Kolev is a CI in the Victorian Centre for Aquatic Pollution Identification and Management. Funding for SRE initiatives: 'University Analytical Services Unit' and 'Bioconjugations for Chemical Biology' was also awarded in 2010.

New ARC projects commencing in 2010 include:

**Assoc Prof Evan J Bieske et al.**  
**Laser facility for ultra-sensitive molecular characterization**

**Dr Rachel Caruso**  
**Engineered materials for future energy technologies**

**Dr Linda Feketeova**  
**Formation, structure and chemistry of non-covalent complexes of biomolecules via mass spectrometry**

**Dr John Gehman**  
**Maximizing solid state Nuclear Magnetic Resonance (NMR) with maximum entropy.**

**Prof Andrew Holmes et al.**  
**Synthesis of phosphatidylinositol and inositol polyphosphate derivatives to probe key signaling proteins associated with cell growth and cancer**

**Prof Andrew Holmes et al.**  
**Advanced ultrasonic spray deposition system for large area solar cells fabrication**

**Dr George Khairallah**  
**Catalytic currency: the role of size-reactivity relationships of simple and mixed 'coinage' metal clusters in C-C bond forming reactions**

**Assoc Prof Spas D Kolev et al.**  
**Phytoextraction approaches for mitigating heavy metal release from unlined and loosely capped rural landfills**

**Prof Paul Mulvaney**  
**Repulsive van der Waals forces and Brownian ratchet motors: manipulating thermal and quantum Fluctuations**

**Prof Anthony G Wedd**  
**Chemistry of the transport of nutrient copper in biological cells**

**Assoc Prof Jonathan White**  
**Small molecule X-Ray molecular structure elucidation facility**

**Dr Spencer Williams**  
**Mannosyl transfer processes in leishmania and mycobacteria**

Quality of our researchers is recognized by awards for research excellence including: RACI Burrows Medal to Tony Wedd, Birch Medal to Mark Rizzacasa, Rennie Memorial Medal to Paul Donnelly, Biota Award to Spencer Williams, CS Piper Award to Damien Callahan; Victoria Fellowship to Michelle Ma; JAFIA Award for Spas Kolev.

Interdisciplinary research initiatives in 2010 as targeted future research priorities are: (1) Characterisation of Advanced Materials coupled with environmental/analytical sciences; and (2) Chemical Biology. The ARC Centre of Excellence for Free Radical Chemistry and Biotechnology, led by the University of Melbourne and with Professor Carl Schiesser as Director, aims to strengthen Australia's formidable position in the field of Free Radical Chemistry. Housed in state-of-the-art laboratories in the Bio21 Molecular Science and Biotechnology Institute and in the Department of Pharmacology, the Centre will expand the frontiers of free radical chemistry and biotechnology, and develop advanced materials and technologies for building and transforming industry.

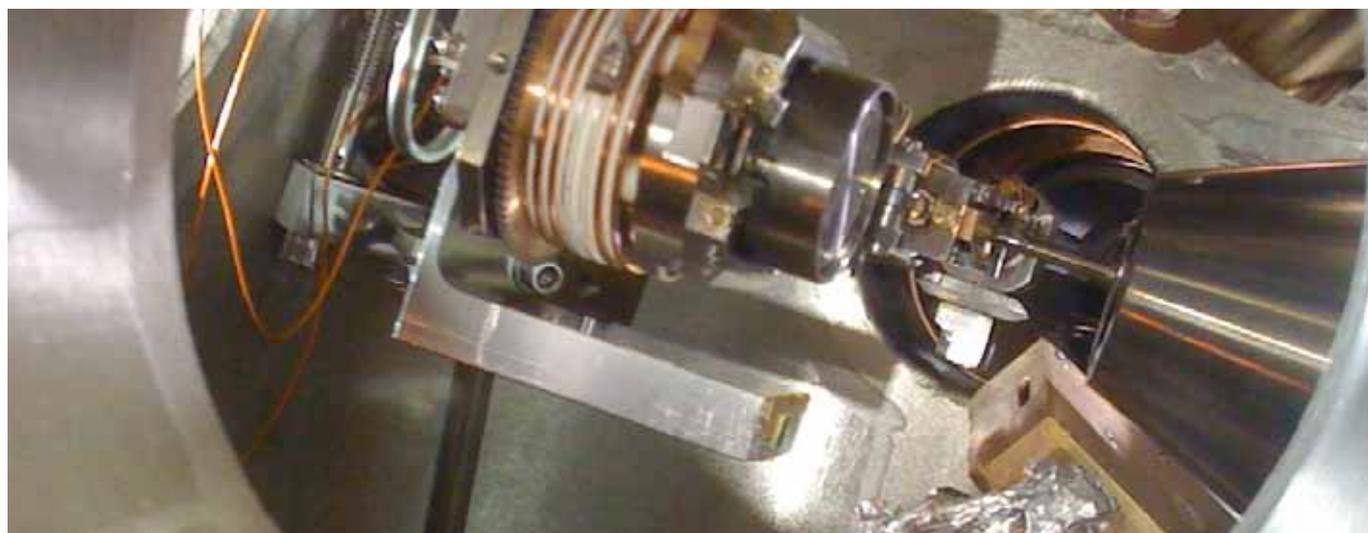
# ARC CENTRE OF EXCELLENCE FOR FREE RADICAL CHEMISTRY AND BIOTECHNOLOGY

The ARC Centre of Excellence for Free Radical Chemistry and Biotechnology was established in 2005 through the award of an Australian Research Council grant worth some \$12 million over five years. At the beginning of 2009, the Centre was awarded a further \$9.8 million to continue its ground-breaking free radical research. The Centre is a collaborative venture between the University of Melbourne, the Australian National University, the University of Sydney (incorporating the Heart Research Institute), Monash University (incorporating the Monash Institute of Pharmaceutical Sciences), the Queensland University of Technology and the University of Wollongong.

The Centre is home to over 160 researchers, drawing together a unique grouping of fundamental chemists, medicinal chemists, biochemists, biologists and materials scientists dedicated to the understanding and application of free radical chemistry.

Organisations that are affiliated with the Centre include: Bluescope Steel, Dulux Australia, PPG Industries Australia Pty Ltd, the Centre for Cultural Materials Conservation, the Environmental Biotechnology Co-operative Research Centre, CSIRO, with international partners that include the Rudjer Boskovic Institute (Croatia) and Osaka Prefecture University (Japan).

During 2010 the Centre hosted 33 international visitors, while Centre personnel presented at conferences on 179 occasions, while 8 media releases saw 511 articles in the popular press highlighting Centre research activities.



# CONFERENCES

Assoc Prof Muthupandian Ashokkumar	March	4th International GCOE (Global Centre of Excellence)-Chem6 Symposium for Emergence of New Molecular Chemistry	Tokyo, Japan
	May	12th Meeting of the European Society of Sonochemistry	Chania, Greece
	June	World Classical Tamil Conference	Coimbatore, India
	August	Dairy Ultrasonics Workshop 2010	Werribee, VIC
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Assoc Prof Evan Bieske	July	2010 RACI National Convention	Melbourne, VIC
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Dr Colette Boskovic	September	International Conference on Coordination Chemistry	Adelaide, SA
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Assoc Prof Rachel Caruso	May	CSIRO Advanced Materials Workshop 2010	Melbourne, VIC
	May	Australia-China Symposium on Nanomaterials for Clean Energy	Brisbane, QLD
	July	2010 RACI National Convention	Melbourne, VIC
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Mrs Penny Commons	February	VCE Chemistry Conference	Melbourne, VIC
	November	Chemistry Education Association November Lectures	Melbourne, VIC
Dr Paul Donnelly	July	39th International Conference on Coordination Chemistry ICC39	Adelaide, SA
	September	Free Radical Spring Carnival 2010	Melbourne, VIC
	November	Australian Academy of Science Boden Conference for 'Metals in Biological Systems' 2010	Canberra, ACT
Dr Linda Feketeova	January	XVII Symposium on Atomic, Cluster and Surface Physics (SASP XVII)	Obergurgl, Austria
	July 7th	International Conference on Radiation Damage in Biomolecular systems (RADAM 2010)	Madrid, Spain
	July 10th	European Conference on Atoms Molecules and Photons (ECAMP 2010)	Salamanca, Spain
	August	240th American Chemical Society National Meeting	Boston, United States
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Dr John Gehman	August	XXIVth International Conference on Magnetic Resonance in Biological Systems (ICMRBS)	Cairns, QLD
	November	34th Australian Society for Biophysics Meeting	Adelaide, SA
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Professor Ken Ghiggino	July	2010 RACI National Convention	Melbourne, VIC
	July	XXIII IUPAC Symposium on Photochemistry	Ferrara, Italy
	November	6th Asian Photochemistry Conference	Wellington, New Zealand
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States

# CONFERENCES

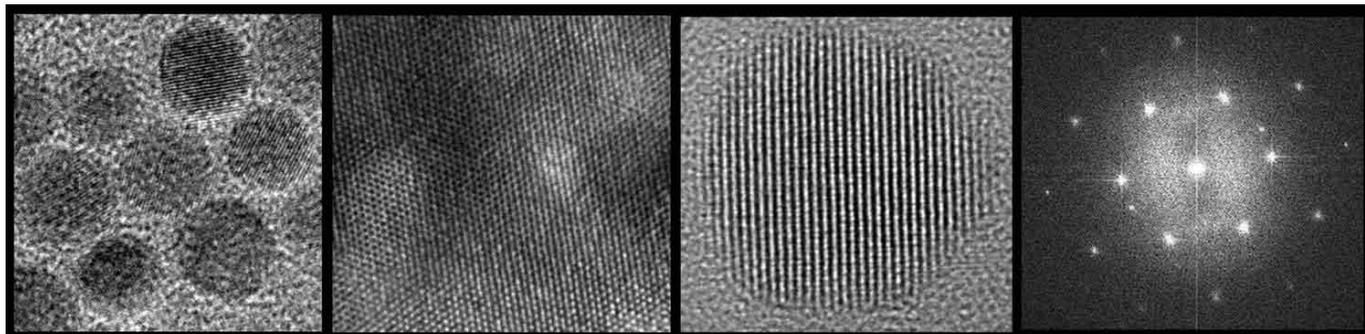
Dr Catrin Goeschen	June	EUCHEM 2010 Conference on Organic Free Radicals	Bologna, Italy
Professor Franz Grieser	March	RSCI Rideal Lecture London	United Kingdom
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Dr Richard Harcourt	April	Association of Molecular Modellers of Australia	Melbourne, VIC
Dr Liisa Hirvonen	April	RACI Biophysical Chemistry Workshop	Adelaide, SA
	July	XXIII IUPAC Symposium on Photochemistry	Ferrara, Italy
	July	MicroScience 2010	London, United Kingdom
	November	6th Asian Photochemistry Conference	Wellington, New Zealand
Professor Andrew Holmes	February	Ta-shue Chou Memorial Lecturer, Academia Sinica Taipei	Taiwan ROC
	May	Robert Robinson Lectures	Oxford, United Kingdom
	April	MRS Spring Meeting San Francisco	United States
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Dr Yvonne Kavanagh	June	EUCHEM 2010 Conference on Organic Free Radicals	Bologna, Italy
Dr George Khairallah	May	58th American Society for Mass Spectrometry Conference	Utah, United States
	August	240th American Chemical Society National Meeting	Boston, United States
	September	Life Science Meeting Innsbruck	Igls, Austria
	September	Dalton Discussions 12 Conference	Durham, United Kingdom
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Assoc Prof Spas Kolev	February	Emerging Trends in Separation Science and Technology 2010	Kalpakkam, India
	April	16th International Conference on Flow Injection Analysis and Related Techniques	Pattaya, Thailand
	July	2010 RACI National Convention	Melbourne, VIC
	July	5th International Conference on Ion Exchange (ICIE 2010)	Melbourne, VIC
	July	FIA & Analytical Conference 2010	Sunshine Coast, QLD
	September	3rd Oxford Water and Membranes Research Event	Oxford, United Kingdom
	November	6th Conference of the Aseanian Membrane Society & 7th International Membrane Science and Technology Conference	Sydney, NSW
	December	18th RACI R&D Topics Conference	Hobart, TAS
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Dr Elizabeth Krenske	August	240th American Chemical Society National Meeting	Boston, United States
Professor Robert Lamb	April	Faraday Discussions 146	Richmond, United States
	June	NSF Summer School on Nanoscale Science of Biological Interfaces/ICMR	Santa Barbara, California

# CONFERENCES

Professor Robert Lamb	June	SEACOAT Summer School University of Heidelberg (EUF7Framework/Marie Curie Summer School)	Heidelberg, Germany
	July	2010 RACI National Convention	Melbourne, VIC
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Dr Hadi Lioe	February	35th Lorne Conference on Protein Structure and Function	Lorne, VIC
Dr Lachlan McKimmie	November	6th Asian Photochemistry Conference	Wellington, New Zealand
Dr Evan Moore	July	XXIII IUPAC Symposium on Photochemistry	Ferrara, Italy
	September	International Conference on Coordination Chemistry	Adelaide, SA
	September	International Conference on Luminescence of Lanthanides	Odessa, Ukraine
Mr Mick Moylan	February	VCE Chemistry Conference	Melbourne, VIC
	July	2010 RACI National Convention	Melbourne, VIC
	November	Chemistry Education Association November Lectures	Melbourne, VIC
Professor Paul Mulvaney	April	NaNax4 Nanoscience with Nanocrystals	Lake Starnberg, Germany
	April	Bioplasmonics Ascona	Switzerland
	June	Royal Society Meeting on Metallic Metamaterials and Plasmonics Buckinghamshire	United Kingdom
	July	2010 RACI National Convention	Melbourne, VIC
	August	4th Korea-Japan Forum	Fukuoka, Japan
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Professor Richard O'Hair	March	UOM Inorganic/Analytical Chemistry Seminar	Melbourne, VIC
	May	58th American Society for Mass Spectrometry (ASMS) Conference	Utah, United States
	June	Invited Lectures: Using Gas Phase Models to Study Complexity	Lyon & Paris, France
	September	Life Science Meeting Innsbruck	Igls, Austria
Professor Mark Rizzacasa	July	5th Heron Conference on Reactive Intermediates and Unusual Molecules (HERON 5)	Heron Island, Queensland
		Gordon Conference on Natural Products	New Hampshire, USA
	August	18th IUPAC International Conference on Organic Synthesis	Bergen, Norway
Dr Marc-Antoine Sani	August	2010 XXIVth International Conference on Magnetic Resonance in Biological Systems (ICMRBS)	Cairns, QLD
	November	34th Australian Society for Biophysics Meeting	Adelaide, SA
Professor Carl Schiesser	June	EUChem 2010 Conference on Organic Free Radicals	Bologna, Italy
	November	19th Annual Conference Society for Free Radical Research- Australasia	Akaroa, New Zealand
Professor Frances Separovic	February	54th Biophysical Society Meeting	San Francisco, United States
	April	RACI Biophysical Chemistry Workshop	Adelaide, SA
	April	455th WE Heraeus Seminar: Biophysics of Membrane-Active Peptides	Bad Honnef, Germany
	July	WWMR 2010: World Wide Magnetic Resonance Conference	Florence, Italy

# CONFERENCES

Professor Frances Separovic (cont.)	August	AMP 2010: Australia-Croatia Workshop on Antimicrobial Peptides	Split, Croatia
	August	ICMRBS 2010: 24th Intl Conf Magn Reson. Biol. Systems	Cairns, QLD
	November	34th Australian Society for Biophysics Meeting	Adelaide, SA
Assoc Prof Trevor Smith	January	6th Asian Conference on Ultrafast Phenomena	Taipei, Taiwan
	April	RACI Biophysical Chemistry Workshop	Adelaide, SA
	October	Super-Resolution Optical Microscopy Workshop	Melbourne, VIC
	November	Asian Photochemistry Symposium	Wellington, New Zealand
Professor Peter Taylor	November	Supercomputing 2010	New Orleans, United States
Assoc Prof Peter Tregloan	December	27th Australasian Society for Computers in Learning in Tertiary Education Conference – ascilite 2010	Sydney, NSW
Professor Anthony Wedd	June	10th European Biological Inorganic Chemistry Conference	Thessaloniki, Greece
	July	39th International Conference on Coordination Chemistry ICC39	Adelaide, SA
	October	7th International Copper Meeting	Alghero, Italy
	November	5th Asian Biological Inorganic Chemistry Conference AsBIC5	Kaohsiung, Taiwan
Assoc Prof Jonathan White	July	5th Heron Conference on Reactive Intermediates and Unusual Molecules (HERON5)	Heron Island, QLD
	August	World Federation for Nuclear Medicine and Biology	Capetown, South Africa
Dr Uta Wille	June	Euchem Conference on Free Radical Chemistry	Bologna, Italy
	July	2010 RACI National Convention	Melbourne, VIC
	November	Austrian Health and Medical Research Congress	Melbourne, VIC
Dr Spencer Williams	May	Philanthropy and Research Australia Health and Medical Research Forum	Melbourne, VIC
	August	25th International Carbohydrate Symposium	Tokyo, Japan
	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States
Mr Alex Wu	April	Faraday Discussions 146	Virginia, United States
	July	2010 RACI National Convention	Melbourne, VIC
Dr Zhiguang Xiao	November	5th Asian Biological Inorganic Chemistry Conference (AsBIC-5)	Kaohsiung, Taiwan
Assoc Prof Charles Young	December	6th International Chemical Congress of Pacific Basin Societies (Pacifichem) 2010	Honolulu, United States



Quantum dots ZnO coreshells

# ORGANIC CHEMISTRY SEMINAR PROGRAM 2010:

**Coordinator: Dr George Khairallah**

**12 February**

**Prof. Ian Paterson**

University of Cambridge  
Recent Progress in the Synthesis of Bioactive Polyketide Natural Products

**23 February**

**Dr Rudi Marquez**

University of Glasgow  
Adventures in Natural Product Synthesis and Biological Chemistry

**26 February**

**Prof William Skene**

University of Montreal  
Teaching an old dog new tricks: conjugated imines as functional materials

**5 March**

**Dr Pavel Anzenbacher, Jr**

Bowling Green State University  
Atto-liter Reactors and Chemistry at a Zeptomol Scale

**12 March**

**Prof Larry Overman**

Univ. Of California - Irvine  
Molecular Rearrangements in the Construction of Complex Molecules

**22 March**

**Prof Dr Martin Oestreich**

Westfälische Wilhelms-Universität Münster  
The Silicon Side of Asymmetric Catalysis

**29 March**

**Prof Peter Seeberger**

Max Plank Institute  
Microreactors for Organic Synthesis

**9 April**

**Dr Gino DiLabio**

National Research Council of Canada  
Linear Organic Nanostructure on Silicon Surfaces: Fabrication, Properties and Some Kinetic Insights

**23 April**

**Prof Terry Lybrand**

Vanderbilt University  
Molecular modelling studies of G protein-coupled receptors: Possible applications for drug design

**11 June**

**Dr Dirk Sartor**

Siegfried Actives  
Cardiolynx- From Explosives to Drugs

**18 June**

**Dr Paul Wyatt**

University of Bristol  
Teaching Innovations - Using Technology to Enrich the Tradition

**9 July**

**Dr Tobias Bender**

Rizzacasa group  
Binding Site Determination of V-ATPase Inhibitors by Photoaffinity Labeling

**16 July**

**Dr Catrin Goeschen**

Wille group  
Photoswitchable Proton Transfer based on 2-(2,4-Dinitrobenzyl)pyridine and its Derivatives

**23 July**

**Prof Laren M. Tolbert**

Georgia Tech  
Outside the beta-barrel: GFP chromophores as protein sensors

**23 July**

**Prof Rainer Herges**

University of Kiel  
Design and Synthesis of Molecules with Machine-like Functions

**26 July**

**Prof Steven Clark**

University of Glasgow  
New Strategies for the Construction of Marine Polyether Natural Products and their Application to the Synthesis of CTX3X and the Gambieric Acids

**28 July**

**Shinn Dee Yeoh**

White group  
Application of structural correlation principles to Wagner-Meerwein rearrangement of Nopinol and Beckmann rearrangement of cyclohexanone oxime derivatives

**30 July**

**Prof. Neil Greenham**

University of Cambridge  
Charge separation and recombination in polymer solar cells

**2 August**

**Vivien (Mengxin) Yin**

Holmes group  
Completion seminar Synthesis and Biological Applications of Phospholipid-Based Chemical Probes

**6 August**

**Asimo Karnezis**

White group  
Completion seminar Gas and solution phase studies of silyl and germyl substituted pyridinium ions

**13 August**

**Mui Ling Khoo**

Rizzacasa group  
Completion seminar Total synthesis of episilvestrol and silvestrol and a bioactive analogue

**27 August**

**David Tso**

White group  
Completion seminar Mining for stable  $\sigma$ -silyl carbenium ions

**3 September**

**Shea Fern Lim**

White group  
Completion seminar The Nature of Neighboring group participation by Chalcogen substituents

**10 September**

**Dr Erik Strandberg**

University of Karlsruhe  
Orientation of membrane-bound peptides studied by solid-state NMR: The influence of the hydrophobic membrane core

**13 September**

**Wyvette Wee**

White group  
Completion seminar Synthesis of Novel Radioprotectors Derived from Hoechst 33342

**17 September**

**Samantha Wimala**

Rizzacasa group  
Completion seminar Studies towards the synthesis of the spirangiens

**8 October**

**Dr Tilman Lechel**

Rizzacasa group  
New Syntheses of Five- and Six-membered Heteroaromatics via Highly Substituted Enamides

**15 October**

**Dr Belinda Abbott**

LaTrobe University  
From PI3K and PDEs to PDK1 and PNAAs

**22 October**

**Harvey Li**

Wille group  
Completion seminar Adventures with peroxy radicals as precursors for  $\sigma$ -oxo carbenes and related reactive intermediates

**29 October**

**Corin Storkey**

Schiesser group  
Completion seminar The synthesis of selenium containing carbohydrates and their biological application

**5 November**

**Dr Chris Burns**

WEHI  
Discovery of New Drugs for Cancer

**12 November**

**Jean-Jacques Youtes**

WEHI  
Cancer and Natural Products

# INORGANIC AND ANALYTICAL CHEMISTRY SEMINAR PROGRAM 2010:

**Coordinator: Professor Tony Wedd**

**March 2**

**Prof Mattias Driess**

Technical University of Berlin  
Oxygen Activation by Nickel? Lessons from Nickel Superoxides and Related Systems

**March 9**

**Prof Richard O'Hair**

University of Melbourne  
Synthesis and Reactivity of Organometallics via Decarboxylation: History and Recent Progress

**March 16**

**Dr Wei Shen**

Monash University  
Printing of Paper-Based, Low-Cost and Portable Microfluidic Devices for Biochemical and Environmental Analysis

**March 23**

**Prof Alan Bond**

Monash University  
Exploitation of the Rich Electrochemistry and Photochemistry of Polyoxometalate Anions

**March 30**

**Prof Scott McIndoe**

University of Victoria, Canada  
Mass spectrometry-led Catalyst Discovery

**April 6**

**Easter Break**

**April 20**

**Dr Phil Andrews**

Monash University  
Exploring the Structural Diversity and Biological Activity of Metal-Organic Bismuth Compounds

**April 27**

**Ms Youngsoo Cho**

University of Melbourne  
Gold Production from Sulfide Minerals

**Mr. Steven Russell**

University of Melbourne  
Mass Spectrometric Analysis of Coordination Complexes

**May 4**

**Dr Zhiguang Xiao**

University of Melbourne  
The Challenges of Determining Metal-Protein Affinities

**May 11**

**Dr Scott Watkins**

CSIRO Mol. Health Tech.  
Photo-Electron Spectroscopy in Air (PESA) - understanding interfaces and energy levels

**May 18**

**Dr Conor Hogan**

La Trobe University  
Electrochemiluminescence and Opto-electrochemical Sensing of Iridium, Ruthenium and Platinum complexes

**July 27**

**ICCC 39 Conference Adelaide**

**August 3**

**Prof Annie Powell**

University of Karlsruhe, Germany  
New Ways Forward in Coordination Chemistry

**August 10**

**Dr Hadi Lioe**

University of Melbourne  
Mass spectrometry studies of protein and peptide complexes

**August 17**

**Prof John Enemark**

University of Arizona, US  
Determination of the structures of the Mo(V) centers of sulfite oxidizing enzymes using pulsed EPR spectroscopy of "difficult" nuclei

**August 24**

**Mr Brett Paterson**

University of Melbourne  
Transition Metal Complexes of Bis(thiosemicarbazones): Applications for Imaging and Therapy

**August 31**

**Mr Chak Ming Sze**

University of Melbourne  
Mass Spectrometry Studies of Metallo-proteins Containing Copper, Zinc and Platinum

**Sept. 7**

**Ms Laura McCormick**

University of Melbourne  
Discrete and Infinite Supramolecular Systems

**Sept. 14**

**Dr Lyndal Jensen**

University of Minnesota, US  
Unravelling the Reactivity of the Heme enzyme Mau by X-ray Crystallography and Spectroscopy

**Oct. 5**

**Mr Chak Ming Sze**

University of Melbourne  
Mass Spectrometry Studies of Metallo-proteins Containing Copper, Zinc and Platinum

**Oct. 12**

**Mr David Hayne**

University of Melbourne  
Biom mineralization: New synthetic strategies and materials inspired by nature

**Dr Christine Schieber**

University of Melbourne  
Cobalt complexes that can regulate a protein that protects neurons after traumatic injury

**Dec. 7**

**Prof Andreas Grohmann**

Technical University of Berlin  
Superpodal Ligands: Reactivity Enhancement, Surface Modification, and Information Storage

# PHYSICAL CHEMISTRY SEMINARS

**Tuesday, Feb. 9, 2010**

**Prof Suzanne Giasson**

Department of Chemistry and Faculty of Pharmacy, Université de Montréal  
"Static and dynamic surface properties of polymer-bearing substrates"

**Thurs, Feb. 18, 2010**

**Mr Adam Brotchie**

School of Chemistry, University of Melbourne  
PhD Swansong: "Acoustic Cavitation in Dual-frequency Sound Fields"

**Thurs, March 11, 2010**

**A/Prof Matthew Paige**

School of Chemistry, University of Saskatchewan, Canada  
"Ultrasensitive microscopy and spectroscopy of chemical systems"

**Thurs, May 6, 2010**

**Prof Frances Separovic**

School of Chemistry, University of Melbourne  
"Breaking through the barrier: membrane interactions of antimicrobial and amyloid peptides"

**Thurs, May 13, 2010**

**Ms Zubaidah Ningsih**

School of Chemistry, University of Melbourne  
M.Phil. Completion Seminar  
"The Interaction Kinetics Of A Melittin Derivative With Phospholipid Membranes"

**Thurs, May 20, 2010**

**Dr Jeff Davis**

Swinburne University of Technology  
"Two-colour, multi-dimensional spectroscopy of semiconductor nanostructures and light harvesting molecules and complexes"

**Thurs, May 27, 2010**

**Dr Ben Boyd**

Faculty of Pharmacy and Pharmaceutical Sciences, Drug Delivery, Disposition and Dynamics, Monash Institute of Pharmaceutical Sciences, Monash University  
"Manipulating structure in self assembled materials for drug delivery applications"

**Tuesday, June 1, 2010**

**Dr Terry Frankcombe**

Research School of Chemistry, Australian National University  
"Interstellar ammonia: Multi-faceted theory and modelling of a deuterium scrounge"

**Thurs, June 17, 2010**

**Ms Jenny Zuo**

School of Chemistry, University of Melbourne  
PhD Completion Seminar: "Ultrasound treatment of starch-based systems: from high-frequency low-power to low-frequency high-power and from starch granule to starch molecules"

**Friday, June 18, 2010**

**A/Prof Anita Jones**

School of Chemistry, University of Edinburgh  
"Fluorescence lifetime imaging microscopy of microfluidic systems: quantitative mapping of temperature with sub-degree resolution"

**Thurs, July 15, 2010**

**Prof Luis M. Liz-Marzán**

Departamento de Química Física, Universidade de Vigo, Spain  
"Self-Assembly and Directed Assembly of Gold Nanoparticles"

**Tues, Aug 3, 2010**

**Prof Michael Bowker**

Wolfson Nanoscience Lab and Cardiff Catalysis Institute, School of Chemistry Cardiff University  
"Adventures in Catalytic Nanospace: "seeing" the active site by atom-resolved STM"

**Thurs, Aug. 12, 2010**

**Prof Neil Greenham**

Cavendish Laboratory, Cambridge University  
"Charge transport and memory effects in films of ZnO nanoparticles"

**Thurs, Sept. 2, 2010**

**Dr Orde Munro**

School of Chemistry, University of KwaZulu-Natal  
"New ideas and applications for some chelates of Co(III) and Au(III)"

**Thurs, Oct. 7, 2010**

**Ms Lisa Smith**

School of Chemistry, University of Melbourne  
PhD Completion Seminar: "Fundamental Studies Toward the Production of High Quality Doped Semiconductor Nanocrystals"

**Tuesday, Nov. 9, 2010**

**Dr Jonathan Hobley**

Institute of Materials Research and Engineering, Singapore  
"Time Resolved Imaging and Spectroscopy in Biological and Photochemically Activated Systems"

**Thurs, Nov. 18, 2010**

**Prof Toshio Sakai**

International Young Researchers Empowerment Center, Department of Chemical and Material Engineering, Shinshu University, Japan  
"Metal Nanoparticle Synthesis Through Polymer Reduction and Sonochemical Reduction in Solutions"

**Wed, Nov 24, 2010**

**Ms Lauren Palmer**

School of Chemistry, University of Melbourne  
PhD Completion Seminar: The Effects of Bubbly Alcohol: Studies on the Wetting Behaviour of Hydrophobic and Superhydrophobic Surfaces

**Mon. Dec. 6, 2010**

**Mr Christian Potzner**

School of Chemistry, University of Melbourne  
PhD Completion Seminar: Band Structure Engineering in II-VI Semiconductor Core/Shell Nanocrystals

# PUBLICATIONS

## B1 - Research Book Chapters

**O'Hair R.A.J. 2010.** Gas Phase Ligand Fragmentation to Unmask Reactive Metallic Species. *Reactive Intermediates MS Investigations in Solution*. Weinheim, Germany: Wiley-VCH, pp. 199-227.

**Wille U. 2010.** Intermolecular Radical Additions to Alkynes: Cascade-Type Radical Cyclizations. *Carbon-Centered Free Radicals and Radical Cations*. Hoboken, United States: John Wiley & Sons, pp. 9-41.

## C1 - Journal Articles Refereed

**Abrahams B, Elliott RWE, Hudson T & Robson R. 2010.** A New Class of Easily Generated TCNQ(2-)-Based Coordination Polymers. *Crystal Growth & Design*. 10 (7): 2860-2862.

**Abrahams B, Fitzgerald N & Robson R. 2010.** A Doughnut-Like (Mn-III)(12) Metallocycle Formed by a Rigid Angular Bis-Catecholate with a Nanometer-Sized Central Hole. *Inorganic Chemistry*. 49 (13): 5953-5956.

**Abrahams B, Fitzgerald N & Robson R. 2010.** Cages with Tetrahedron-Like Topology Formed from the Combination of Cyclotricatechylene Ligands with Metal Cations. *Angewandte Chemie*. 49 (16): 2896-2899.

**Abrahams B, Grannas M, Hudson T & Robson R. 2010.** A Simple Lithium(I) Salt with a Microporous Structure and Its Gas Sorption Properties. *Angewandte Chemie - International Edition*. 49 (6): 1087-1089.

**Abrahams B, Grannas M, McCormick L, Robson R & Thistlethwaite P. 2010.** Chiral and achiral linear coordination polymers from aldaric acids. *CrystEngComm*. 12 (10): 2885-2895.

**Abrahams B, Hudson T & Robson R. 2010.** A New Approach to DCNQI-Based Coordination Polymers via DCNQIH(2). *Crystal Growth & Design*. 10 (4): 1468-1470.

**Amos RIJ, Smith JA, Yates BF & Schiesser CH. 2010.** Acyl radical addition to benzene and related systems - a computational study. *Tetrahedron*. 66: 7600-7604.

**Anandan, Oh, Yoon & Ashokkumar M. 2010** Photoluminescence properties of sonochemically synthesized gold nanoparticles for DNA biosensing. *Spectrochimica Acta Part A - Molecular and Biomolecular Spectroscopy*. 76: 191-196.

**An, Liang, Liu, Yang, Wang H. 2010.** Nano-structures of de-branched potato starch obtained by Isoamylolysis. *Journal of Food Science*. 76 (1)N11-N14

**Arantes & Taylor PR. 2010.** Approximate multiconfigurational treatment of spin-coupled metal complexes. *Journal of Chemical Theory and Computation*. 6: 1981-1989.

**Ashokkumar M, Bhaskaracharya R, Kentish S, Lee J, Palmer & Zisu. 2010.** The Ultrasonic Processing of Dairy Products - An Overview. *Dairy Science & Technology*. 90: 147-168.

**Ashokkumar M, Lee, Iida, Yasui, Kozuka, Tuziuti & Towata. 2010.** Spatial distribution of acoustic cavitation bubbles at different ultrasound frequencies. *ChemPhysChem*. 11: 1680-1684.

**Aurelio L, Valant C, Flynn BL, Sexton PM, White J, Christopoulos A & Scammells PJ. 2010.** Effects of Conformational restriction of 2-Amino-3-benzoylthiophenes on A1 Adenosine Receptor Modulation. *Journal of Medicinal Chemistry*. 53: 6550-6559.

**Bai S, Nguyen T, Mulvaney P & Wang D. 2010.** Using Hydrogels to Accommodate Hydrophobic Nanoparticles in Aqueous Media via Solvent Exchange. *Advanced Materials*. 22 (30): 3247-3250.

**Barnett ZM, Feketeova L & O'Hair R.A.J. 2010.** The major fragment ion of S-Adenosyl-L-methionine arises from a neighbouring group reaction. *Rapid Communications in Mass Spectrometry*. 24: 1387-1391.

**Basu P, Kail BW & Young C. 2010.** Influence of the Oxygen Atom Acceptor on the Reaction Coordinate and Mechanism of Oxygen Atom Transfer From the Dioxo-Mo(VI) Complex, TpiPrMoO<sub>2</sub>(OPh), to Tertiary Phosphines. *Inorganic Chemistry*. 49: 4895-4900.

**Beattie D, Rouf, Gander, May W, Ratkowsky, Donner CDD, Gill MG, Grice I & Tiralongo. 2010.** Antibacterial metabolites from Australian macrofungi from the genus Cortinarius. *Phytochemistry*. 71: 948-955.

**Bell T, Bhosale V, Forsyth M, Hayne D, Ghiggino K, Hutchison J, Jani H, Langford J, Lee A-P & Woodward P. 2010.** Melt-induced fluorescent signature in a simple naphthalenediimide. *Chemical Communications*. 46 (27): 4881-4883.

**Bernaushaw N, Doronila AI & Ashokkumar M. 2010.** Sonochemical oxidation of arsenic(III) to arsenic(V) using potassium peroxydisulfate as an oxidizing

agent. *Water Research*. 44: 3687-3695.

**Bernaushaw N, Kim, Ashokkumar M, Yamashita & Choi. 2010.** Preparation and properties of visible light responsive TiZrO<sub>4</sub>/Bi<sub>2</sub>O<sub>3</sub> photocatalysts for 4-chlorophenol decomposition. *Journal of Hazardous Materials*. 182: 557-562.

**Best SP & Cheah MH. 2010.** Applications of X-Ray Absorption Spectroscopy to Biologically-Relevant Metal-Based Chemistry. *Radiation Physics and Chemistry*. 79 (2): 185-194.

**Blackman, Rutledge, Tesic, Saliba & Scollary GRS. 2010.** Examination of the potential for using chemical analysis as a surrogate for sensory analysis. *Analytica Chimica Acta*. 660 (1-2): 2-7.

**Boland M, Hatty R, Separovic F, Hill A, Tew D, Barnham K, Haigh C, James, Masters C & Collins S. 2010.** Anionic Phospholipid Interactions of the Prion Protein N Terminus Are Minimally Perturbing and Not Driven Solely by the Octapeptide Repeat Domain. *Journal of Biological Chemistry*. 285: 32282-32292.

**Bonggotgetsakul N, Ashokkumar M, Cattrail RW & Kolev SD. 2010.** The use of sonication to increase extraction rate in polymer inclusion membranes. An application to the extraction of gold(III). *Journal of Membrane Science*. 365: 242-247.

**Brasholz M, Johnson B, Macdonald JM, Polyzos A, Tsanaktsidis JM, Saubern S, Holmes A & Ryan JH. 2010.** Flow Synthesis of Tricyclic Spiropiperidines as Building Blocks for the Histronicotxin Family of Alkaloids. *Tetrahedron*. 66 : 6445-6449.

**Brasholz M, Macdonald J, Saubern S, Ryan J & Holmes A. 2010.** A Gram-Scale Batch and Flow Total Synthesis of Perhydrohistronicotxin. *Chemistry - A European Journal*. 16 (37): 11471-11480.

**Brotchie A, Grieser F & Ashokkumar M. 2010.** Characterization of acoustic cavitation bubbles in different sound fields. *Journal of Physical Chemistry B*. 114 (34): 11010-11016.

**Brotchie A, Statham T, Zhou M, Devendra L, Grieser F & Ashokkumar M. 2010.** Acoustic bubble size, coalescence, and sonochemical activity in aqueous electrolyte solutions saturated with different gases. *Langmuir*. 26 (15): 12690-12695.

# PUBLICATIONS

- Buncic G, Donnelly P, Paterson BM, White J, Zimmermann M, Xiao Z & Wedd A. 2010.** A Water-Soluble Bis(thiosemicarbazone) Ligand. A Sensitive Probe and Metal Buffer for Zinc. *Inorganic Chemistry*. 49: 3071-3073.
- Burrell G, Bugar M, Gong, Dunlop N & Separovic F. 2010.** NMR Relaxation and Self-Diffusion Study at High and Low Magnetic Fields of Ionic Association in Protic Ionic Liquids. *Journal of Physical Chemistry B*. 114: 11436-11443.
- Burrell GL, Bugar M, Separovic F & Dunlop F. 2010.** Preparation of protic ionic liquids with minimal water content and <sup>15</sup>N NMR study of proton transfer. *Physical Chemistry Chemical Physics*. 12: 1571-1577.
- Burrell GL, Dunlop F & Separovic F. 2010.** Non-Newtonian viscous shear-thinning in ionic liquids. *Soft Matter*. 6: 2080-2086.
- Cao B & Williams S. 2010.** Chemical approaches for the study of the mycobacterial glycolipids phosphatidylinositol mannosides, lipomannan and lipoarabinomannan. *Natural Product Reports*. 27: 919-947.
- Carland MW, Grannas M, Cairns M, Roknic V, Denny W, Mcfadyen WDM & Murray V. 2010.** Substituted 9-aminoacridine-4-carboxamides tethered to platinum(II)diamine complexes: Chemistry, cytotoxicity and DNA sequence selectivity. *Journal of Inorganic Biochemistry*. 104 (8): 815-819.
- Carregal-Romero S, Perez-Juste J, Herves P, Liz-Marzan L & Mulvaney P. 2010.** Colloidal Gold-Catalyzed Reduction of Ferrocyanate (III) by Borohydride Ions: A Model System for Redox Catalysis. *Langmuir*. 26 (2): 1271-1277.
- Cavalieri F, Zhou M & Ashokkumar M. 2010.** The design of multifunctional microbubbles for ultrasound image-guided cancer therapy. *Current Topics in Medicinal Chemistry*. 10: 1198-1220.
- Chandrapala JJC, Augustin M, Mckinnon I & Udabage S. 2010.** Effects of pH, calcium-complexing agents and milk solids concentration on formation of soluble protein aggregates in heated reconstituted skim milk. *International Dairy Journal*. 20: 777-784.
- Chandrapala, Mckinnon, Augustin & Udabage. 2010.** The influence of milk composition on pH and calcium activity measured in situ during heat treatment of reconstituted skim milk. *Journal of Dairy Research*. 77: 257-264.
- Chan NYO, Ming C, Hao X, Smith T & Dunstan D. 2010.** Polymer Compression in Shear Flow. *Journal of Physical Chemistry Letters*. 1 (13): 1912-1916.
- Chen D, Cao L, Huang, Imperia, Cheng & Caruso RA. 2010.** Synthesis of Monodisperse Mesoporous Titania Beads with Controllable Diameter, High Surface Areas, and Variable Pore Diameters (14-23 nm). *Journal of the American Chemical Society*. 132 (12): 4438-4444.
- Cheng H, Hossain MH, Ia KI, Mills RDM, Chan KCC, Jarasrassamee BJ & Jorissen N. 2010.** Structural elements and allosteric mechanisms governing regulation and catalysis of CSK-family kinases and their inhibition of Src-family kinases. *Growth Factors*. 28 (5): 329-350.
- Cho K, Liaw IIL, Wu AHW & Lamb R. 2010.** Influence of Roughness on a Transparent Superhydrophobic Coating. *Journal of Physical Chemistry C*. 114: 11228-11233.
- Clark A, Vestner J, Barril C, Maury C, Prenzler P & Scollary G. 2010.** The Influence of Stereochemistry of Antioxidants and Flavanols on Oxidation Processes in a Model Wine System: Ascorbic Acid, Erythorbic Acid, (+)-Catechin and (-)-Epicatechin. *Journal of Agricultural and Food Chemistry*. 58 (2): 1004-1011.
- Collins, Parker L, Gehman J, Eckley, Perugini M, Separovic F & Fabre W. 2010.** Self-Assembly of Peptides into Spherical Nanoparticles for Delivery of Hydrophilic Moieties to the Cytosol. *ACS Nano*. 4 : 2856-2864.
- Conway S, Gardiner J, Grove S, Johns M, Lim Z, Painter G, Robinson D, Schieber C, Thuring J, Wong L, Yin M, Burgess AWB, Catimel BLC, Hawkins P, Ktistakis N, Stephens L & Holmes A. 2010.** Synthesis and biological evaluation of phosphatidylinositol phosphate affinity probes. *Organic & Biomolecular Chemistry*. 8 (1): 66-76.
- Dagastine R, Webber G, Manica R, Stevens G, Grieser F & Chan D. 2010.** Viscosity Effects on Hydrodynamic Drainage Force Measurements Involving Deformable Bodies. *Langmuir*. 26 (14): 11921-11927.
- Djoko KY, Chong LX, Wedd A & Xiao Z. 2010.** Reaction Mechanisms of the Multicopper Oxidase CueO from *Escherichia coli* Support Its Functional Role as a Cuprous Oxidase. *Journal of the American Chemical Society*. 132 (6): 2005-15.
- Doherty CM, Caruso RA & Drummond J. 2010.** High performance LiFePO<sub>4</sub> electrode materials: Influence of colloidal particle morphology and porosity on lithium-ion battery power capability. *Energy & Environmental Science*. 3: 813-823.
- Donald A, Demireva, Leib D, Aiken Jeannette & Williams R. 2010.** Electron Hydration and Ion-Electron Pairs in Water Clusters Containing Trivalent Metal Ions. *Journal of the American Chemical Society*. 132 (13): 14.
- Donald A, Leib D, Demireva, Negru, Neumark M & Williams R. 2010.** "Weighing" Photon Energies with Mass Spectrometry: Effects of Water on Ion Fluorescence. *Journal of the American Chemical Society*. 132 (20): 15.
- Donald A & Williams R. 2010.** Measuring the Extent and Width of Internal Energy Deposition in Ion Activation Using Nanocalorimetry. *Journal of the American Society for Mass Spectrometry*. 21 (4): 13.
- Donald W. 2010.** An Improved Cluster Pair Correlation Method for Obtaining the Absolute Proton Hydration Energy and Enthalpy Evaluated with an Expanded Data Set. *Journal of Physical Chemistry B*. 114 (41): 13189-13200.
- Donald WAD, Leib D, Demireva, Negru, Neumark M & Williams R. 2010.** Average Sequential Water Molecule Binding Enthalpies of M(H<sub>2</sub>O)<sub>19-1242+</sub> (M = Co, Fe, Mn, and Cu) Measured with Ultraviolet Photodissociation at 193 and 248 nm. *Journal of Physical Chemistry A*. 115 (1): 2-12
- Donner CDD. 2010.** Radical Conjugate Addition of Aryl-Tethered  $\beta$ -Alkoxyacrylates: Formal Synthesis of (+/-)-Frenolicin B and (+/-)-epi-Frenolicin B. *Synthesis*. 2010 (3): 415-420.
- Drechsler AP, Anderluh, Norton S & Separovic F. 2010.** Solid-state NMR study of membrane interactions of the pore-forming cytolysin, equinatoxin II. *Biochimica et Biophysica Acta-Biomembranes*. 1798: 244-251.
- Drisko G, Chee Kimling M, Scales, Ide AHI, Sizgek, Caruso RA & Luca. 2010.** One-pot preparation and uranyl adsorption properties of hierarchically porous zirconium titanium oxide beads using phase separation processes to vary macropore morphology. *Langmuir*. 26: 17581-17588.

# PUBLICATIONS

- Drisko G, Imperia, De Los Reyes, Luca & Caruso RA. 2010.** Size matters: Incorporation of poly(acrylic acid) and small molecules into hierarchically porous metal oxides prepared with and without templates. *Langmuir*. 26: 14203-14209.
- Drisko G, Zelcer, Luca, Caruso RA & Soler-Illia JdeAA. 2010.** One-pot synthesis of hierarchically structured ceramic monoliths with adjustable porosity. *Chemistry of Materials*. 22: 4379-4385.
- Dryza V, Alvino F & Metha F. 2010.** Onset of Carbon-Carbon Bonding in Ta<sub>5</sub>Cy (y=0-6) Clusters: A Threshold Photoionization and Density Functional Theory Study. *Journal of Physical Chemistry A*. 114: 4080.
- Dryza V & Bieske E. 2010.** Infrared spectra and density functional theory calculations for Mn+(CH<sub>4</sub>)<sub>n</sub> (n = 16) clusters. *International Journal of Mass Spectrometry*. 297 (1-3): 46-54.
- Dryza V, Poad BLJ & Bieske E. 2010.** Mixing laser spectroscopy and mass spectrometry-infrared spectra of metal cation-hydrogen complexes. *European Journal of Mass Spectrometry*. 16: 415-420.
- Duan X, Roberts K, Tran H & Lamb R. 2010.** Single-source chemical vapor deposition of clean oriented Al<sub>2</sub>O<sub>3</sub> thin films. *Thin Solid Films*. 517 (24): 6726-6730.
- Duan X, Tran H, Roberts K & Lamb R. 2010.** Solvothermal approach for low temperature deposition of aluminium oxide thin films. *Thin Solid Films*. 518 (15): 4290-4293.
- Ebbs SD, Kolev SD, Piccinin RCRT, Woodrow IE and Baker AJM. 2010.** Solubilization of heavy metals from gold ore by adjuvants used during gold phytomining. *Minerals Engineering*. 23: 819-822.
- Edtbauer, Denifl, Vizcaino, An Der Lan, Russell KA, Taubitz J, Wille U, Feketeova L, O'Hair R.A.J., Maerk, Illenberger & Scheier. 2010.** Very Low Energy Electrons Transform the Cyclobutane-Pyrimidine Dimer into a Highly Reactive Intermediate. *ChemPhysChem*. 11: 561-564.
- El Sous M, Ganame D, Tregloan PAT & Rizzacasa MA. 2010.** Total Synthesis of (-)Reveromycin A via a Hetero-Diels-Alder Approach. *Synthesis*. 2010 (23): 3954-3966.
- Feketeova L, Khairallah G, Brunet, Lemoine, Antoine, Dugourd & O'Hair R.A.J. 2010.** Fragmentation of the tryptophan cluster [Trp<sub>92</sub>H]<sup>2-</sup> induced by different activation methods. *Rapid Communications in Mass Spectrometry*. 24 (22): 3255-3260.
- Feketeova L, Wong & O'Hair R.A.J. 2010.** The role of metal cation in electron-induced dissociation of tryptophan. *The European Physical Journal. Special Topics*. 60: 11-20.
- Ferneer M, Littleton B, Plakhotnik T, Rubinsztein-Dunlop H, Gomez D & Mulvaney P. 2010.** Charge hopping revealed by jitter correlations in the photoluminescence spectra of single CdSe nanocrystals. *Physical Review B*. 81 (15): 155307/1-155305/7.
- Fodero-Tavoletti M, Villemagne V, Paterson BM, White A, Li Q, Camakaris J, O'Keefe G, Cappai R, Barnham K & Donnelly P. 2010.** Bis(thiosemicarbazonato) Cu-64 Complexes for Positron Emission Tomography Imaging of Alzheimer's Disease. *Journal of Alzheimer's Disease*. 20 (1): 49-55.
- Fong Hang, Lee, Lim, Zakhidov A, Wong W, Holmes A, Ober K & Malliaras G. 2010.** Orthogonal processing and patterning enabled by highly fluorinated light-emitting polymers. *Advanced Materials*. 23: 735-739.
- Fry B, Winter K, Norman JAN, Roelants KMR, Nabuurs RJA, Van Osch MJP, Teeuwisse WM, Van Der Weerd L, McNaughtan JEM, Scheib H, Kwok HF, Greisman LR, Kochvaj E, Miller LJ, Gao F, Karas JAK, Scanlon DS, Lin F, Kuruppu S, Wong L, Shaw C & Hodgson W. 2010.** Functional and structural diversification of the anguimorpha lizard venom system. *Molecular and Cellular Proteomics*. 9 (11): 2369-2390.
- Ganyushin, Gilka N, Taylor PR, Marian & Neese. 2010.** The Resolution of the Identity Approximation for Calculations of Spin-Spin Contribution to Zero-Field Splitting Parameters. *Journal of Chemical Physics*. 132: 144111-144121.
- Gao, Williams SJW, Woodman L & Marriott J. 2010.** Comprehensive two-dimensional gas chromatography, retention indices and time-of-flight mass spectra of flavonoids and chalcones. *Journal of Chromatography A*. 1217: 8317-8326.
- Gardener A, Liaw I, Aeppli, Boyd W, Chater J, Jones S, Mcphail S, Sankar, Marshall A, Sikora, Thornton & Heutz. 2010.** A novel route for the inclusion of metal dopants in silicon. *Nanotechnology*. 21 (2): 025304-25308.
- Gomez Alviarez DE, Vernon K, Mulvaney P & Davis T. 2010.** Coherent superposition of exciton states in quantum dots induced by surface plasmons. *Applied Physics Letters*. 96 (7).
- Gomez D, Vernon K, Mulvaney P & Davis T. 2010.** Surface Plasmon Mediated Strong Exciton-Photon Coupling in Semiconductor Nanocrystals. *Nano Letters*. 10 (1): 274-278.
- Gourlay C, Taylor M, Smith D & Young C. 2010.** Isovalent and mixed-valent molybdenum complexes containing MoV(-E)(-S<sub>2</sub>)MoV/IV (E = O, S) Core Units. *Inorganica Chimica Acta*. 363 (6): 1126-1132.
- Gunawan C & Rizzacasa MA. 2010.** Mulberry Diels-Alder Adducts: Synthesis of Chalcomoracin and Mulberrofuran C Methyl Ethers. *Organic Letters*. 12 (7): 1388-1391.
- Hakki Z, Cao B, Heskes A, Goodger J, Woodrow I & Williams S. 2010.** Synthesis of the monoterpene esters cypellolepin C and cunilolide B and evidence for their widespread occurrence in eucalyptus. *Carbohydrate Research*. 345: 2079-2084.
- Hall L, Hill C, Cole JH, Stadler B, Caruso RA, Mulvaney P, Wrachtrup J & Hollenberg L. 2010.** Monitoring ion-channel function in real time through quantum decoherence. *Proceedings of the National Academy of Sciences of the United States of America*. 107 (44): 18777-18782.
- Hao X, Chan N, Heck C, Tanigaki N, Paige M, Dunstan D & Smith T. 2010.** "Log-Rolling" Alignment in Friction-Transferred Light-Emitting Conjugated Polymer Thin Films. *Macromolecules*. 43 (24): 10475-10480.
- Harcourt RD. 2010.** Comments on Valence Bond Structures for Three-Electron Three-Center and Four-Electron Three-Center Bonding Units. *Zeitschrift fur anorganische und allgemeine chemie*. 636 (2010): 1962-1967.
- Harcourt RD. 2010.** Valence Bond Structures for Three-Electron Three-Center and Four-Electron Three-Center Bonding Units: Some Further Examples. *Journal of Physical Chemistry A*. 114 (2010): 8573-8580 and 8932.
- Harmata, Krenske EH & Houk KN. 2010.** Origin of Stereoselectivity in the (4 + 3) Cycloadditions of Chiral Alkoxy Silylyl Cations with Furan. *Organic Letters*. 12 (3): 444-447.

# PUBLICATIONS

- Holmes RJ, Abrahams B, Murray V, Denny W & Mcfadyen WDM. 2010.** A 2D hydrogen-bonded network constructed from large organic dications. *Journal of Molecular Structure*. 975 (1-3): 186-189.
- Honig CDF, Sader JE, Mulvaney P & Ducker WA. 2010.** Lubrication forces in air and accommodation coefficient measured by a thermal damping method using an atomic force microscope. *Physical Review E*. 81 (5): 056305.
- Hope GA, Woods R, Buckley AN, White J & Maclean J. 2010.** Spectroscopic characterisation of n-octanohydroxamic acid and potassium hydrogen n-octanohydroxamate. *Inorganica Chimica Acta*. 363: 935-943.
- Hor L, Dobson R, Dogovski C, Hutton C & Perugini M. 2010.** Crystallization and preliminary X-ray diffraction analysis of diaminopimelate epimerase from *Escherichia coli*. *Acta Crystallographica Section F - Structural Biology and Crystallization Communications*. 66 (Pt 1): 37-40.
- Horvat SM & Schiesser CH. 2010.** An ab initio and DFT study of homolytic substitution reactions of acyl radicals at sulfur, selenium, and tellurium. *New Journal of Chemistry*. 34: 1692-1699.
- Hossain MA, Samuel CS, Binder C, Hewitson TDH, Tregear GWT, Wade JDW & Bathgate RB. 2010.** The chemically synthesized human relaxin-2 analog, B-R13/17K H2, is an RXFP1 antagonist. *Amino Acids*. 39 (2): 409-416.
- Huang, Chen D, Zhang, Caruso RA & Cheng. 2010.** Dual-Function Scattering Layer of Submicrometer-Sized Mesoporous TiO<sub>2</sub> Beads for High-Efficiency Dye-Sensitized Solar Cells. *Advanced Functional Materials*. 20 (8): 1301-1305.
- Hussain, Bernaudshaw, Shim, Kim, Choi, Lee, Park. 2010.** Efficiency Enhancement in Bulk Heterojunction Polymer Photovoltaic Cells Using ZrTiO<sub>4</sub>/Bi<sub>2</sub>O<sub>3</sub> Metal-Oxide Nanocomposites. *Japanese Journal of Applied Physics*. 49 (4): 423011-423014.
- Iida, Ashokkumar M, Tuziuti, Kozuka, Yasui, Towata & Lee JYL. 2010.** Bubble population phenomena in sonochemical reactor: I Estimation of bubble size distribution and its number density with pulsed sonication-laser diffraction method. *Ultrasonics Sonochemistry*. 17 (2): 473-479.
- Iida, Ashokkumar M, Tuziuti, Kozuka, Yasui, Towata & Lee. 2010.** Bubble population phenomena in sonochemical reactor: II Estimation of bubble size distribution and its number density by simple coalescence model calculation. *Ultrasonics Sonochemistry*. 17: 480-486.
- Jagannathan M, Grieser F & Ashokkumar M. 2010.** Combined advanced oxidation processes for the synergistic degradation of ibuprofen in aqueous environments. *Journal of Hazardous Materials*. 178: 202-208.
- Jagannathan M, Grieser F & Ashokkumar M. 2010.** Degradation of formetanate hydrochloride by combined advanced oxidation processes. *Separation and Purification Technology*. 73: 409-414.
- Jagannathan M, Grieser F & Ashokkumar M. 2010.** Degradation of Orange G by advanced oxidation processes. *Ultrasonics Sonochemistry*. 17: 338-343.
- Jagannathan M, Kumar, Anandan, Grieser F & Ashokkumar M. 2010.** Degradation of acid red 88 by the combination of sonolysis and photocatalysis. *Separation and Purification Technology*. 74: 336-341.
- Jagannathan M, Kumar, Anandan, Zhou MZ, Grieser F & Ashokkumar M. 2010.** Ultrasound assisted photocatalytic degradation of diclofenac in an aqueous environment. *Chemosphere*. 80: 747-752.
- Jagannathan M, Sathish Kumar PSS, Anandan, Grieser F & Ashokkumar M. 2010.** Sonophotocatalytic degradation of monocrotophos using TiO<sub>2</sub> and Fe<sup>3+</sup>. *Journal of Hazardous Materials*. 177 (1-4): 944-949.
- Kerr DJ, White J & Flynn BL. 2010.** A Reductive-Coupling plus Nazarov Cyclization Sequence in the Asymmetric Synthesis of Five-Membered Carbocycles. *Journal of Organic Chemistry*. 75: 7073-7084.
- Khairallah G, Yoo J & O'Hair R.A.J. 2010.** Formation of Methylmagnesium or Coordinated Ylide? Competition between Decarboxylation of Acetate and Betaine Ligands in [CH<sub>3</sub>CO<sub>2</sub>MgO<sub>2</sub>CCH<sub>2</sub>X(CH<sub>3</sub>)<sub>2</sub>]<sup>+</sup> (where X=NCH<sub>3</sub> and S). *Organometallics*. 29: 1238-1245.
- Kolev SD, Cardwell TJ, Catrall RW & Coe dLC. 2010.** Mathematical modeling of a Nafion membrane based optode incorporating 1-(2-pyridylazo)-2-naphthol under flow injection conditions. *Talanta*. 82: 1156-1163.
- Krenske EH, Houk KN, Lim, Wengryniuk & Coltart. 2010.** Origins of Stereoselectivity in the α-Alkylation of Chiral Hydrazones. *Journal of Organic Chemistry*. 75: 8578-8584.
- Krenske EH, Houk KN, Holmes A & Thompson JT. 2010.** Entropy vs. Tether Strain Effects on Rates of Intramolecular 1,3-Dipolar Cycloadditions of N-alkenylhydrazones. *Tetrahedron Letters*. 52: 2181-2184
- Kumar, Manivel, Anandan, Zhou M, Grieser F & Ashokkumar M. 2010.** Sonochemical synthesis and characterization of gold-ruthenium bimetallic nanoparticles. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*. 356: 140-144.
- Kwak S, Forbes B, Lee Y, Belgi A, Wade J & Hossain MA. 2010.** Solid Phase Synthesis of an Analogue of Insulin, A0:R glargine, That Exhibits Decreased Mitogenic Activity. *International Journal of Peptide Research and Therapeutics*. 16 (3): 153-158.
- Kyne S, Lin CY, Ryu I, Coote ML & Schiesser CH. 2010.** First determination of the rate constant for ring-closure of an azahexenyl radical: 6-aza-7-ethyl-5-hexenyl. *Chemical Communications*. 46: 6521-6523.
- Lam A, Hutton C & O'Hair R.A.J. 2010.** Role of 2-oxo and 2-thioxo modifications on the proton affinity of histidine and fragmentation reactions of protonated histidine. *Rapid Communications in Mass Spectrometry*. 24: 2591-2604.
- Lam A & O'Hair R.A.J. 2010.** Isomer differentiation via collision-induced dissociation: The case of protonated α-, β- and γ-phenylalanines and their derivatives. *Rapid Communications in Mass Spectrometry*. 24: 1779-1790.
- Lam A, Ryzhov & O'Hair R.A.J. 2010.** Mobile Protons Versus Mobile Radicals: Gas-Phase Unimolecular Chemistry of Radical Cations of Cysteine-Containing Peptides. *Journal of the American Society for Mass Spectrometry*. 21: 1296-1312.
- Lam H, Hung, Norton S, Separovic F & Watts. 2010.** Solid-state NMR and simulation studies of equinatoxin II N-terminus interaction with lipid bilayers. *Proteins - Structure, Function, and Bioinformatics*. 78: 858-872.
- Lee, Heng, Swann J, Gehman J, Separovic F & Aguilar. 2010.** Real-time quantitative analysis of

# PUBLICATIONS

lipid disordering by aurein 1.2 during membrane adsorption, destabilisation and lysis. *Biochimica et Biophysica Acta-Biomembranes*. 1798: 1977-1986.

**Lee J, Fong H, Zakhidov A, Mccluskey G, Taylor P, Santiago-Berrios M, Abruna H, Holmes A, Malliaras G & Ober C. 2010.** Semiperfluoroalkyl Polyfluorenes for Orthogonal Processing in Fluorous Solvents. *Macromolecules*. 43 (3): 1195-1198.

**Leong TSL, Kentish SEK & Ashokkumar M. 2010.** Growth of Bubbles by Rectified Diffusion in Aqueous Surfactant Solutions. *Journal of Physical Chemistry C*. 114 (47): 20141-20145.

**Li B, White J & Hutton C. 2010.** Synthesis of the Leu-Trp component of the celerogentin family of cyclic peptides through a C-H activation-cross-coupling strategy. *Australian Journal of Chemistry*. 63: 438-444.

**Li H, Ren Z, Liu D, Chen Y, Lang J, Cheng Z, Zhu X & Abrahams B. 2010.** Single-crystal-to-single-crystal structural transformations of two sandwich-like Cu(II) pyrazolate complexes and their excellent catalytic performances in MMA polymerization. *Chemical Communications*. 46 (44): 8430-8432.

**Lim SC, Paterson BM, Fodero-Tavoletti M, O'Keefe J, Cappai R, Barnham K, Villemagne & Donnelly P. 2010.** A copper radiopharmaceutical for diagnostic imaging of Alzheimer's disease: a bis(thiosemicarbazonato) copper (ii) complex that binds to amyloid- $\beta$  plaques. *Chemical Communications*. 46 (30): 5437-5439.

**Lim SC, Price KA, Chong SF, Paterson BM, Caragounis A, Barnham K, Crouch P, Peach M, Dilworth R, Donnelly P & White A. 2010.** Copper and zinc bis(thiosemicarbazonato) complexes with a fluorescent tag: synthesis, radiolabelling with copper-64, cell uptake and fluorescence studies. *Journal of Biological Inorganic Chemistry*. 15: 225-235.

**Liu D, Ren Z, Li H, Lang J, Li N & Abrahams B. 2010.** Single-Crystal-to-Single-Crystal Transformations of Two Three-Dimensional Coordination Polymers through Regioselective [2+2] Photodimerization Reactions. *Angewandte Chemie - International Edition*. 49 (28): 4767-4770.

**Lohse, Krenske EH, Antoline, Houk KN & Hsung . 2010.** Regioselectivities of (4 + 3) Cycloadditions

between Furans and Oxazolidinone-Substituted Oxyallyls. *Organic Letters*. 12 (23): 5506-5509.

**Lomonte C, Doronila AI, Gregory D, Baker AJM & Kolev SD. 2010.** Phytotoxicity of biosolids and screening of selected plant species with potential for mercury phytoextraction. *Journal of Hazardous Materials*. 173: 494-501.

**Lomonte C, Fritsche J, Bramanti E, Doronila AI, Gregory D, Baker AJM & Kolev SD. 2010.** Assessment of the pollution potential of mercury contaminated biosolids. *Environmental Chemistry*. 7: 146-152.

**Lomonte C, Sgherri C, Baker AJM & Kolev SD. 2010.** Antioxidative response of *Atriplex codonocarpa* to mercury. *Environmental and Experimental Botany*. 69 (1): 9-16.

**Luo X, Bathgate R, Zhang W, Liu Y, Shao X, Wade J & Guo Z. 2010.** Design and recombinant expression of insulin-like peptide 5 precursors and the preparation of mature human INSL5. *Amino Acids*. 39: 1343-1352.

**Luo X, Liu Y, Layfield S, Shao X, Bathgate R, Wade J & Guo Z. 2010.** A simple approach for the preparation of mature human relaxin-3. *Peptides*. 31 (11): 2083-2088.

**Mashford B, Nguyen T, Wilson G & Mulvaney P. 2010.** All-inorganic quantum-dot light-emitting devices formed via low-cost, wet-chemical processing. *Journal of Materials Chemistry*. 20 (1): 167-172.

**Maury, Clark & Scollary GRS. 2010.** Determination of the impact of bottle colour and phenolic concentration on pigment development in white wine stored under external conditions. *Analytica Chimica Acta*. 660 (1-2): 81-86.

**Mckimmie LJ, Lincoln C, Jasieniak JJ & Smith T. 2010.** 3-Pulse Photon Echo Peak Shift Measurements of Capped CdSe Quantum Dots. *Journal of Physical Chemistry C*. 114: 82-88.

**Moore EGM, Xu, Jocher CJJ, Corneillie TMC & Raymond KNR. 2010.** Eu(III) Complexes of Functionalized Octadentate 1-Hydroxypyridin-2-ones: Stability, Bioconjugation, and Luminescence Resonance Energy Transfer Studies. *Inorganic Chemistry*. 49 (21): 9928-9939.

**Moore EGM, Xu JX, Dodani SCD, Jocher CJJ, D'Aleo AD, Seitz MS & Raymond KNR. 2010.** 1-Methyl-

3-hydroxy-pyridin-2-one Complexes of Near Infra-Red Emitting Lanthanides: Efficient Sensitization of Yb(III) and Nd(III) in Aqueous Solution. *Inorganic Chemistry*. 49 (9): 4156-4166.

**Morfa A, Beane G, Mashford B, Singh B, Della Gaspera E, Martucci A & Mulvaney P. 2010.** Fabrication of ZnO Thin Films from Nanocrystal Inks. *Journal of Physical Chemistry C*. 114 (46): 19815-19821.

**Morgan L, Liu, Frost L & Wacławik R. 2010.** Implications of precursor chemistry on the alkaline hydrothermal synthesis of titania/titanate nanostructures. *Journal of Physical Chemistry C*. 114 (1): 101-110.

**Mozer j, Ma, Wong W, Jones D, Baeuerle & Wallace G. 2010.** The effect of molecule size and shape on free charge generation, transport and recombination in all-thiophene dendrimer:fullerene bulk heterojunctions. *Organic Electronics*. 11: 573-582.

**Mulyana Y, Poneti GP, Moubaraki, Murray, Abrahams B, Sorace & Boskovic C. 2010.** Solvation effects on the valence tautomeric transition of a cobalt complex in the solid state. *Dalton Transactions*. 39: 4757-4767.

**Na S, Yu B, Kim S, Vak D, Kim T, Yeo J & Kim D. 2010.** Fully spray-coated ITO-free organic solar cells for low-cost power generation. *Solar Energy Materials and Solar Cells*. 94 (8): 1333-1337.

**Ng WLW, Taylor M, Hill LMR, White J & Young C. 2010.** Novel O,O'-Donor Oxo-MoIV Hydrotris(3-isopropylpyrazolyl) borate Complexes Formed by Chelation of Potentially Hydrogen-Bonding Phenolate Ligands on Reduction of Dioxo-MoVI Complexes. *European Journal of Inorganic Chemistry*. - (2010): 3261-3269.

**Ng WLW, Taylor M, White J & Young C. 2010.** cis-Dioxo- and cis-(Hydroxo)oxo-Mo(V) Complexes Stabilized by Intramolecular Hydrogen-Bonding. *Inorganic Chemistry*. 49: 9460-9469.

**O'Hair R.A.J, Williams M & Clark. 2010.** Neighboring group stabilization by  $\sigma$ -holes. *Journal of Molecular Modeling*. 16: 559-565.

**Oh S, Na S, Jo J, Lim B, Vak D & Kim D. 2010.** Water-Soluble Polyfluorenes as an Interfacial Layer Leading to Cathode-Independent High Performance of Organic Solar Cells. *Advanced Functional Materials*. 20 (12): 1977-1983.

**Ostorhazi E, Rozgonyi F, Sztodola A, Harnos F, Kovalszky**

# PUBLICATIONS

- I, Szabo D, Knappe D, Hoffmann R, Cassone M, Wade J, Bonomo R & Otvos L. 2010.** Preclinical advantages of intramuscularly administered peptide A3-APO over existing therapies in *Acinetobacter baumannii* wound infections. *Journal of Antimicrobial Chemotherapy*. 65 (11): 2416-2422.
- Palmer L, Cookson & Lamb R. 2010.** The Relationship Between Nanobubbles and the Hydrophobic Force. *Langmuir*. 27 (1): 144-147.
- Palmieri M, Nowell C, Condron M, Gardiner J, Holmes A, Desai J, Burgess A & Catimel B. 2010.** Analysis of cellular phosphatidylinositol (3,4,5)-trisphosphate levels and distribution using confocal fluorescent microscopy. *Analytical Biochemistry*. 406 (1): 41-50.
- Paterson BM, Karas J, Scanlon D, White J & Donnelly P. 2010.** Versatile new Bis(thiosemicarbazone) Bifunctional Chelators: Synthesis, Conjugation to Bombesin(7-14)-NH<sub>2</sub>, and Copper-64 Radiolabelling. *Inorganic Chemistry*. 49: 1884-1893.
- Paterson BM, White J & Donnelly P. 2010.** A hexadentate bis(thiosemicarbazonato) ligand: rhenium(V), iron(III) and cobalt(III) complexes. *Dalton Transactions*. 39: 2831-2837.
- Perreau V, Orchard, Adlard, Bellingham S, Cappai R, Ciccotosto G, Cowie T, Crouch P, Duce J, Evin G, Faux, Hill A, Hung Y, James S, Li Q, Mok S, Tew D, White A, Bush, Hermjakob & Masters C. 2010.** A domain level interaction network of amyloid precursor protein and Ab of Alzheimer's disease. *Proteomics*. 10 (12): 2377-2395.
- Peterson J, Smith T & Thordarson P. 2010.** Synthesis and room temperature photo-induced electron transfer in biologically active bis(terpyridine) ruthenium(II)-cytochrome c bioconjugates and the effect of solvents on the bioconjugation of cytochrome c. *Organic & Biomolecular Chemistry*. 8: 151-162.
- Plakhotnik T, Fernee M, Littleton B, Rubinsztein-Dunlop H, Potzner C & Mulvaney P. 2010.** Anomalous Power Laws of Spectral Diffusion in Quantum Dots: A Connection to Luminescence Intermittency. *Physical Review Letters*. 105 (16): 167402-167405.
- Povie G, Villa G, Ford LR, Pozzi D, Schiesser CH & Renaud P. 2010.** Role of catechol in the radical reduction of B-alkylcatecholboranes in presence of methanol. *Chemical Communications*. 46: 803-805.
- Rebiere, Clark, Schmidtke Prenzler & Scollary GRS. 2010.** A robust method for quantification of volatile compounds within and between vintages using headspace-solid-phase micro-extraction coupled with GC-MS - Application on Semillon wines. *Analytica Chimica Acta*. 660 (1-2): 149-157.
- Rijs N & O'Hair R.A.J. 2010.** Unimolecular Reactions of Organocuprates and Organoargentates. *Organometallics*. 29: 2282-2291.
- Rijs N, Sanvido B, Khairallah G & O'Hair R.A.J. 2010.** Gas phase synthesis and reactivity of dimethylaurate. *Dalton Transactions*. 39: 8655-8662.
- Rijs N, Yates F & O'Hair R.A.J. 2010.** Dimethylcuprate Undergoes a Dyotropic Rearrangement. *Chemistry - A European Journal*. 16: 2674-2678.
- Rios-Font, Sodupe, Rodriguez-Santiago & Taylor PR. 2010.** The role of exact exchange in the description of Cu<sup>2+</sup>-(H<sub>2</sub>O)<sub>n</sub> (n=1-6) complexes by means of DFT methods. *Journal of Physical Chemistry A*. 114: 10857-10863.
- Ritchie C, Alley K & Boskovic C. 2010.** Lacunary Tungstotellurates(IV): [Te<sub>2</sub>W<sub>17</sub>O<sub>61</sub>]<sup>12-</sup>, [Te<sub>2</sub>W<sub>16</sub>O<sub>58</sub>(OH)<sub>2</sub>]<sup>14-</sup> and [Te<sub>2</sub>W<sub>18</sub>O<sub>62</sub>(OH)<sub>2</sub>]<sup>10</sup>. *Dalton Transactions*. 39: 8872-8874.
- Ritchie C & Boskovic C. 2010.** Disassembly and Reassembly of Polyoxometalates: The Formation of Chains from an Adaptable Precursor. *Crystal Growth & Design*. 10 (2): 488-491.
- Ritchie C, Moore E, Speldrich, Koegerler & Boskovic C. 2010.** Terbium Polyoxometalate Organic Complexes: Correlation of Structure with Luminescence Properties. *Angewandte Chemie - International Edition*. 49: 7702-7705.
- Saggiomo, Goeschen, Herges, Quesada & Luening. 2010.** Ion Transport Across Membranes Facilitated by a Dynamic Combinatorial Library. *European Journal of Organic Chemistry*. 2337-2343.
- Sakai Y, Kadota K, Hayashita T, Catrall RW & Kolev SD. 2010.** The effect of the counter anion on the transport of thiourea in a PVC-based polymer inclusion membrane using Capriquat as carrier. *Journal of Membrane Science*. 346 (2): 250-255.
- Sauburn S, Macdonald J, Ryan JH, Woodgate RCJ, Louie TS, Fuchter MJ, White J & Holmes A. 2010.** Tricyclic-isoxazolidine analogues via intramolecular 1,3-dipolar cycloaddition reactions of nitrones. *Tetrahedron*. 66 (20): 2761-2767.
- Sauvage, Chen D, Comte, Huang, Heiniger, Cheng, Caruso RA & Graetzel. 2010.** Dye-Sensitized Solar Cells Employing a Single Film of Mesoporous TiO<sub>2</sub> Beads Achieve Power Conversion Efficiencies Over 10%. *ACS Nano*. 4 (8): 4420-4425.
- Schmidtke L, Rudnitskaya A, Saliba A, Blackman J, Scollary G, Clark A, Rutledge D, Delgadillo I & Legin A. 2010.** Sensory, Chemical, and Electronic Tongue Assessment of Micro-oxygenated Wines and Oak Chip Maceration: Assessing the Commonality of Analytical Techniques. *Journal of Agricultural and Food Chemistry*. 58 (8): 5026-5033.
- Selvaraj, Anandan, Kathiravan, Renganathan & Ashokkumar M. 2010.** The interaction of sonochemically synthesised gold nanoparticles with serum albumins. *Journal of Pharmaceutical and Biomedical Analysis*. 53: 804-810.
- Shabanpoor F, Hughes R, Zhang, Bathgate R, Layfield, Hossain A, Tregear W, Separovic F & Wade J. 2010.** Effect of helix-promoting strategies on the biological activity of novel analogues of the B-chain of INSL3. *Amino Acids*. 38: 121-131.
- Shirbin SJ, Boughton B, Zammit S, Zanatta S, Marcuccio M, Hutton C & Williams S. 2010.** Copper-Free Palladium-Catalyzed Sonogashira and Hiyama Cross-Couplings using Aryl Imidazol-1-ylsulfonates. *Tetrahedron Letters*. 51: 2971-2974.
- Skepper C, Quach T & Molinski T. 2010.** Total Synthesis of Enigmazole A from *Cinachyrella enigmatica*. Bidirectional Bond Constructions with an Ambident 2,4-Disubstituted Oxazole Synthone. *Journal of the American Chemical Society*. 132 (30): 10286-10292.
- Sloggett RJS, Kyi CPK, Tse NAT, Tobin M, Puskar L & Best SP. 2010.** Microanalysis of artworks: IR microspectroscopy of paint cross-sections. *Vibrational Spectroscopy*. 53 (2010): 77-82.
- Smith G, Wermuth U & White J. 2010.** 2,3-Dimethoxy-10-oxostrychnidinium 2-carboxy-4,5-dichlorobenzoate. *Acta Crystallographica Section E - Structure Reports Online*. 66: O4276-O4277.
- Sonawane, Bernaudshaw N, Teo B, Grieser F & Ashokkumar M.**

# PUBLICATIONS

- 2010.** Ultrasound-assisted preparation of semiconductor/polymer photoanodes and their photoelectrochemical properties. *Journal of Physical Chemistry C*. 114: 5148-5153.
- Sonawane, Brotchie A, Grieser F & Ashokkumar M. 2010.** Sonochemical synthesis of ZnO encapsulated functional nanolatex and its anticorrosive performance. *Industrial & Engineering Chemistry Research*. 49: 2200-2205.
- Song, Baek, Seo, Kim, Suk, Woodman O, Williams S. 2010.** Effects of 3',4'-dihydroxyflavonol on vascular contractions of rat aortic rings. *Clinical and Experimental Pharmacology and Physiology*. 37: 803-810.
- Staples M & Schiesser CH. 2010.** Selenochromanes via tandem homolytic addition/substitution chemistry. *Chemical Communications*. 46: 565-567.
- St John AM, Catrall RW & Kolev SD. 2010.** Extraction of uranium(vi) from sulfate solutions using a polymer inclusion membrane containing di-(2-ethylhexyl) phosphoric acid. *Journal of Membrane Science*. 364: 354-361.
- Sun, Dey, Xiao Z, Wedd A, Hodgson O, Hedman & Solomon I. 2010.** Solvation Effects on S K-Edge XAS Spectra of Fe-S Proteins: Normal and Inverse Effects on WT and Mutant Rubredoxin. *Journal of the American Chemical Society*. 132 (36): 12639-47.
- Supain L, Richardson H, Deasy, Kelleher, Ward P & Mckee. 2010.** A Surface Potential Study of Ion-Uptake by 5,11,17,23-Tetra-Tert-Butyl-25,27-Diethoxycarbonyl Methyleneoxy-26,28-Dihydroxycalix[4]Arene and 5,17-(3-Nitrobenzylideneamino)-11,23-Di-Tert-Butyl-25,27-Diethoxycarbonyl Methyleneoxy-26,28-Dihydroxycalix[4]Arene Langmuir Blodgett (LB) Monolayers. *Sains Malaysiana*. 39 (3): 423-433.
- Supain L, Richardson H, Deasy, Kelleher, Ward P & Mckee. 2010.** Interaction between Langmuir and Langmuir-Blodgett Films of Two Calix[4]arenes with Aqueous Copper and Lithium Ions. *Langmuir*. 26 (13): 10906-10912.
- Szabo D, Ostorhazi E, Binas A, Rozgonyi F, Kocsis B, Cassone M, Wade J, Nolte O & Otvos L. 2010.** The designer proline-rich antibacterial peptide A3-APO is effective against systemic Escherichia coli infections in different mouse models. *International Journal of Antimicrobial Agents*. 35 (4): 357-361.
- Szpakolski KB, Latham K, Rix CJ, White J, Moubaraki B & Murray KS. 2010.** Synthetic and Structural Studies on Copper 1H-[1,10]-Phenanthroline-2-one Coordination Complexes: Isolation of a Novel Intermediate During 1,10-Phenanthroline Hydroxylation. *Chemistry - A European Journal*. 16: 1691-1696.
- Tan K, White JMW & Wille U. 2010.** Self-Terminating Radical Cyclizations: How are Thiyl Radicals Performing? *European Journal of Organic Chemistry*. (2010): 4902-4911.
- Tan X, Dagher H, Hutton C & Bourke J. 2010.** Effects of PPAR $\gamma$  ligands on TGF- $\beta$ 1-induced epithelial-mesenchymal transition in alveolar epithelial cells. *Respiratory Research*. 11: 1-13.
- Teo B, Prescott, Price, Grieser F & Ashokkumar M. 2010.** Synthesis of temperature responsive poly(N-isopropylacrylamide) using ultrasound irradiation. *Journal of Physical Chemistry B*. 114 (9): 3178-3184.
- Thiel, Ritchie CR, Miras N, Streb, Mitchell G, Boyd, Corella Ochoa, Rosnes H, Mciver, Cronin & Long. 2010.** Modular Inorganic Polyoxometalate Frameworks Showing Emergent Properties: Redox Alloys. *Angewandte Chemie - International Edition*. 49 (39): 6984-6988.
- Tran T & Schiesser CH. 2010.** Reactions of Acetyl Radical with Acetylene - A Computational Study. *Bulletin of the Korean Chemical Society*. 31 (3): 595-598.
- Trivedi, Lee, Zong, Blumenfeld m, Barrett gm & Hoffman m. 2010.** Synthesis of Heteroatom Substituted Naphthoporphyrazine Derivatives with Near-Infrared Absorption and Emission. *Journal of Organic Chemistry*. 75 (5): 1799-1802.
- Trotter d, Taylor k, Forgie c, Reglinski, Berlouis EA, Kennedy R, Spickett M & Sowden j. 2010.** The structural and electrochemical consequences of hydrogenating Copper N2S2 Schiff base macrocycles. *Inorganica Chimica Acta*. 363 (7): 1529-1538.
- Vakarelski I, Dagastine R, Chan D, Stevens G, Higashitani K & Grieser F. 2010.** Lateral Hydrodynamic Interactions between an Emulsion Droplet and a Flat Surface Evaluated by Frictional Force Microscopy. *Langmuir*. 26: 8002-8007.
- Vakarelski I, Manica R, Tang X, O'Shea SJ, Stevens G, Grieser F, Dagastine R & Chan D. 2010.** Dynamic interactions between microbubbles in water. *Proceedings of the National Academy of Sciences of the United States of America*. 107 (25): 11177-11182.
- Van Der Westhuizen E, Christopoulos A, Sexton P, Wade J & Summers R. 2010.** H2 Relaxin Is a Biased Ligand Relative to H3 Relaxin at the Relaxin Family Peptide Receptor 3 (RXFP3). *Molecular Pharmacology*. 77 (5): 759-772.
- Van Duyvenvoorde H, Van Setten P, Walenkamp M, Van Doorn J, Koenig J, Gauguin L, Oostdijk W, Ruivenkamp C, Losekoot M, Wade J, De Meyts P, Karperien M, Noordam C & Wit J. 2010.** Short Stature Associated with a Novel Heterozygous Mutation in the Insulin-Like Growth Factor 1 Gene. *Journal of Clinical Endocrinology & Metabolism*. 95 (11): E363-E367.
- Vernon K, Funston A, Novo CS, Gomez Alviarez DE, Mulvaney P & Davis T. 2010.** Influence of Particle-Substrate Interaction on Localized Plasmon Resonances. *Nano Letters*. 10 (6): 2080-2086.
- Villemagne V, Perez K, Pike K, Kok WM, Rowe C, White A, Bourgeat, Salvado, Bedo J, Hutton C, Faux N, Masters C & Barnham K. 2010.** Blood-Borne Amyloid- $\beta$  Dimer Correlates with Clinical Markers of Alzheimer's Disease. *Journal of Neuroscience*. 30 (18): 6315-6322.
- Vinodgopal, Bernaudshaw N, Lightcap, Grieser F, Ashokkumar M & Kamat. 2010.** Sonolytic design of graphene-Au nanocomposites. Simultaneous and sequential reduction of graphene oxide and Au(III). *Journal of Physical Chemistry Letters*. 1: 1987-1993.
- Voss JEV, Scally SWS, Taylor NLT, Atkinson S, Griffin MG, Hutton C, Parker MWP, Alderton, Gerrard, Dobson RCD, Dogovski CD & Perugini MAP. 2010.** Substrate-mediated stabilization of a tetrameric drug target reveals Achilles heel in anthrax. *Journal of Biological Chemistry*. 285 (8): 5188-5195.
- Voss J, Scally S, Taylor N, Atkinson SC, Griffin M, Hutton C, Parker M, Alderton M, Gerrard, Dobson R, Dogovski C & Perugini M. 2010.** Substrate-mediated stabilization of a tetrameric drug target reveals achilles heel in anthrax. *Journal of Biological Chemistry*. 285 (8): 5188-95.

# PUBLICATIONS

**Wang H, Lin J, Wang C, Zhang X, An H, Zhou X, Sun J & Hu J. 2010.**

Evaluation of the Radial Deformability of Poly(dG)-Poly(dC) DNA and G4-DNA Using Vibrating Scanning Polarization Force Microscopy. *Langmuir*. 26 (10): 7523-7528.

**Wild A, Kuwata T, Wong, Lobo D, Deev, Schindler S, Okumura & Bieske E. 2010.** Infrared Spectra of Mass-Selected Br<sub>n</sub>(NH<sub>3</sub>)<sub>n</sub> and I<sub>n</sub>(NH<sub>3</sub>)<sub>n</sub> Clusters. *Journal of Physical Chemistry A*. 114 (14): 4762-4769.

**Wille U. 2010.** "Self-terminating radical cyclizations": new insight into the mechanism of the termination step from computational studies. *Journal of Physical Organic Chemistry*. 23: 4902-4911.

**Williams R, McGill N, White JMW & Williams S. 2010.** Neighboring group participation in glycosylation reactions by 2,6-disubstituted 2-O-benzoyl groups: A mechanistic investigation. *Journal of Carbohydrate Chemistry*. 29 (5): 236-263.

**Wong L, Turner KA, White J, Holmes A & Ryan JH. 2010.** Asymmetric Synthesis of Hydroxylated Nine-membered Lactone from Tartaric Acid using the Claisen Rearrangement. *Australian Journal of Chemistry*. 2010 (63): 529-532.

**Wong W, Khoury, Vak DV, Yan, Jones D, Crossley J & Holmes A. 2010.** A porphyrin-hexa-peri-hexabenzocoronene-porphyrin triad: synthesis, photophysical properties and performance in a photovoltaic device. *Journal of Materials Chemistry*. 20 (33): 7005-7014.

**Wong W, Ma C-Q, Pisula W, Yan C, Feng X, Jones D, Mullen k, Janssen R, Bauerle P & Holmes A. 2010.** Self-Assembling Thiophene Dendrimers with a Hexa-peri-hexabenzocoronene Core-Synthesis, Characterization and Performance in Bulk Heterojunction Solar Cells. *Chemistry of Materials*. 22 (2): 457-466.

**Wong W, Singh T, Vak, Pisula, Yan, Feng, Williams L, Chan L, Mao, Jones D, Ma, Muellen, Baeuerle & Holmes A. 2010.** Solution processable fluorenyl hexa-peri-hexabenzocoronenes in organic field effect transistors and solar cells. *Advanced Functional Materials*. 20: 927-938.

**Wong W, Vak, Singh, Ren, Chao, Jones D, Liaw I, Lamb R & Holmes A. 2010.** Ambipolar hexa-peri-hexabenzocoronene-fullerene hybrid materials. *Organic Letters*. 12 (21): 5000-

5003.

**Wu AHW, Cho K, Liaw IIL, Kirby, Moran & Lamb R. 2010.** Hierarchical surfaces: an in situ investigation into nano and micro scale wettability. *Faraday Discussions*. 146: 223-232.

**Xiao Z & Wedd A. 2010.** Challenges of Determining Metal-Protein Affinities. *Natural Product Reports*. 27 (5): 768-789.

**Xie J, Cao S, Good D, Wei M & Ren X. 2010.** Combination of a Fluorescent Dye and a Zn-S Cluster and Its Biological Application as a Stain for Bacteria. *Inorganic Chemistry*. 49 (4): 1319-1321.

**Xie JX, Gilbert-Wilson RJ, Mobaraki, Murray SM & Wedd AGW. 2010.** A Fe(bipy)<sub>2</sub> unit fused to a Keggin Polyoxotungstate Anion. *Australian Journal of Chemistry*. 62: 252-256.

**Xue X, Abrahams B, Xiong R & You X. 2010.** An Unexpected Zinc Coordination Polymer formed during the Preparation of 5-Substituted 1H-Tetrazoles from a Nitrile in Water. *Australian Journal of Chemistry*. 63 (8): 495-497.

**Yap S, Qin C & Woodman O. 2010.** Effects of resveratrol and flavonols on cardiovascular function: Physiological mechanisms. *BioFactors: vitamins - autoregulatory substances - trace elements - growth factors*. 36 (5): 350-359.

**Zanatta S, Jarrott B & Williams S. 2010.** Synthesis and Preliminary Pharmacological Evaluation of Aryl Dithiolethiones with Cyclooxygenase-2-Selective Inhibitory Activity and Hydrogen Sulfide-Releasing Properties. *Australian Journal of Chemistry*. 63: 946-957.

**Zhang S, Hughes RAH, Bathgate RB, Shabanpoor F, Hossain MH, Lin F, Van Lierop B, Robinson AJ & Wade JDW. 2010.** Role of the intra-A-chain disulfide bond of insulin-like peptide 3 in binding and activation of its receptor, RXFP2. *Peptides*. 31: 1730-1736.

**Zhou M, Leong T, Melino, Cavalieri, Kentish S & Ashokkumar M. 2010.** Sonochemical Synthesis of Liquid-Encapsulated lysozyme Microspheres. *Ultrasonics Sonochemistry*. 17: 333-337.

**Zhu, Suits DL, Thompson, Chavan, Dinev Z, Dumon, Smith, Moreman W, Xiang, Siriwardena, Williams S, Gilbert J & Davies J. 2010.** Mechanistic insights into a Ca<sup>2+</sup>-dependent family of mannosidases in a human gut symbiont. *Nature Chemical Biology*. 6: 125-132.

**Zisu, Bhaskaracharya R, Kentish S & Ashokkumar M. 2010.** Ultrasonic processing of dairy systems in large scale reactors. *Ultrasonics Sonochemistry*. 17: 1075-1081.

## C2 - Journal Articles Unrefereed

**Dias D, Smith T, Ghiggino K & Scollary G. 2010.** Ultraviolet light - a contributing factor to pigment development in white wine. *Wine Industry Journal*. 25 (3): 52-61.

## F1 - Full Written Papers Refereed

**Boyd W & Liaw I. 2010.** Excimer ultraviolet sources for thin film deposition: a 15 year perspective. *Laser Applications in Microelectronic and Optoelectronic Manufacturing XV*. 7584 75840C-14. United States: SPIE - International Society for Optical Engineering.

**Kolev SD, Cattrall RW & Baba Y. 2010.** Application of polymer inclusion membranes in the industrial and analytical separation of metal ions. *Proceedings of the DAE-BRNS Biennial Symposium on Emerging Trends in Separation Science and Technology*. 145-154. India: Department of Atomic Energy, Government of India.

## G4 - Major Reports and Working Papers

**Dias DAD, Ghiggino KPG, Smith TAS & Scollary GRS. 2010.** *Wine bottle colour and oxidative spoilage*. Report No. Wayville, Australia: Grape and Wine Research and Development Corporation.





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