

July-September 2007

Volume 1, Issue 3

News from F10NA

The Newsletter of the School of Chemistry UNSW

Changes to the School continue at a great rate

The start of the second session of 2007 was a very exciting time for the School in what is proving to be a year of massive change. After a long selection process to fill positions in Analytical, Physical or Inorganic Chemistry we were fortunate enough to be able to make two outstanding appointments at senior lecturer level from an excellent field. Our two new staff members are Dr. Marcus Cole who previously held a lectureship position at Adelaide University and Dr. Pall Thordarson who held a position as an Australian Research Fellow at Sydney University. Profiles of both our new staff members are presented in this newsletter. Further good news reached the school in

late September when the ARC grant results were announced with new discovery grants to Graham Ball and John Stride, as well as an Australian Post-Doctoral Fellowship to a former Ph.D. student Elicia Wong. There were further successes for the School in the Linkage projects and LIEF programs.

The School was also very active in promoting itself and its new home over the last few months. Most notable was the School's Research Open Day designed to attract new Ph.D. and honours students. Research groups presented their research using posters and the Analytical Centre organized tours of the facilities.

- Barbara Messerle

School of Chemistry Research Open Day

September 13th was an important day for the future of the School with the first Research Open Day. Held in the foyer of the Chemical Sciences Building, research groups presented their latest research via the use of posters. The posters were subdivided into our three research themes of Molecular Devices, Bioactive Molecules and Chemical and Biological Catalysis. More than 100 people attended the day which was characterized by vibrant scientific discussion and the virtues of doing science in F10NA. The day also coincided with the NSW RACI branch annual general meeting which gave the School and Analytical Centre the opportunity to promote ourselves to a broader audience than UNSW. The day

was universally regarded as a great success and promises to be a permanent fixture on the School's calendar for years to come. A big thanks goes out the organizers, particularly Jason Harper for his tireless work in organising the booklets and promotional materials and to Kate Odenthal, Callie Fairman, Leo Lai, Alex Goh and Rongmei Liu for help with the set-up. We also wanted to thank the Analytical Centre for providing us with their foyer space and seminar room for posters.

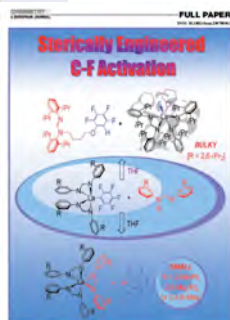
- Justin Gooding

Activity at the Open Day





Marcus Cole



The frontispiece in *Chem. Eur. J.* advertising Marcus Cole's chemistry



Palli Thordarson



Palli's artistic talents gain him another front cover

Marcus Cole: One of Our New Senior Lecturers

Marcus has just been appointed as a Senior Lecturer in Chemistry. He will start at UNSW in early 2008. He completed both his BSc (Hons) and PhD degrees at Cardiff University, UK, and then moved to Australia in 2001 to firstly take up a Royal Society and then ARC Research Fellowship at Monash University. He was also a residential lecturer at Trinity College at the University of Melbourne.

Since 2004, Marcus has occupied the position of Lecturer at the University of Adelaide, where he achieved accelerated promotion to senior lecturer in 2007. He has taught main group and organometallic chemistry to all levels and leads a research group investigating synthetic and structural aspects of group

13 and lanthanide chemistry, especially hydride compounds and low valent complexes. Thus far he has secured independent research funding totaling >\$1M to support these endeavours, including three ARC Discovery Projects, and is the co-author of 50+ refereed research articles and communications. Read about some of his latest research in *Chem. Eur. J.* **13** 8092 (2007) which was showcased on the frontispiece (see graphic opposite).

Marcus will be accompanied in Sydney by his fiancé Jo and select research personnel. He is very enthusiastic in his support of the RACI and community outreach activities, and can't wait to be part of UNSW's vibrant and up-and-coming School of Chemistry!

Palli Thordarson: Our Other New Senior Lecturer

Palli Thordarson (Palli) has also just been appointed as a Senior Lecturer to UNSW Chemistry and will be joining the School in November 2007. Palli holds an Australian Research Fellowship (ARF) from the ARC. He obtained his BSc. in Chemistry in his home country from the University of Iceland, before going to Australia in 1997 where he obtained his PhD from The University of Sydney in 2001. He then left Australia for the Netherlands as a Marie Curie Fellow at the University of Nijmegen. He returned to Australia in 2003 to The University of Sydney where he has successfully built up a vibrant and diverse research programme in bio-mimetic chemistry and bionanotechnology. His research interests include: bioconjugate chemistry, supramolecular chemistry, smart self-assembled materials, photocatalysis, light-activated bioelectronics and the application of microscopy in chemistry.

He has published 25 papers to date, including papers in *Nature* and *Nature Nanotechnology* in addition to several papers in *J. Am. Chem. Soc.*, *Chem. Commun.* and *Angew. Chem.* His work has been cited over 250 times and has been highlighted in *Nature*, *Angew. Chem.*, *Nachrichten aus der Chemie* and *Chemistry in Australia*. Palli has won a number of research and equipment grants, totaling over \$4 million, including his ARF Discovery grant from the ARC in 2006 as the sole investigator as well as two ARC Linkage and two ARC LIEF grants as a co-chief investigator. He lives in the Sutherland Shire with his fiancée, Fleur (they are getting married in March 2008). His current group of four PhD students and one DAAD post-doctoral fellow is scheduled to move with Palli to UNSW over the Christmas period.

Our Publications for Quarter 3

It has been a bumper quarter for publications with 27 refereed journal papers and book chapters released between July and September this year. For the first time this has extended the publication section to a second page. Congratulations is extended to all authors. Papers in really high impact journals such as *JACS* and *Angewandte Chemie* or special invited papers are marked in blue.

From Molecular Devices cluster

- [1] Böcking T, Gooding JJ, Biomimetic membranes in biosensor application, in *Nanobiotechnology of Biomimetic Membranes*, D. Martin, Editor. 2007, Springer-Verlag: Heidelberg. p. 127-154.
- [2] Cansky Z, Rychlovsky P, Petrova Z, Matousek JP, A technique coupling the analyte electrodeposition followed by in-situ stripping with electrothermal atomic absorption spectrometry for analysis of samples with high NaCl contents. *Spectrochim. Acta B*, **62**, 250-257 (2007).
- [3] Ciampi S, Bocking T, Kilian KA, James M, Harper JB, Gooding JJ, Functionalization of acetylene-terminated monolayers on Si(100) surfaces: A click chemistry approach. *Langmuir*, **23**, 9320-9329 (2007).
- [4] Gooding JJ, Chou A, Liu JQ, Losic D, Shapter JG, Hibbert DB, The effects of the lengths and orientations of single-walled carbon nanotubes on the electrochemistry of nanotube-modified electrodes. *Electrochem. Comm.*, **9**, 1677-1683 (2007).
- [5] Gooding JJ, Peptide Modified Electrodes for Detecting Metal Ions, in *Electrochemical Sensor Analysis*, S. Alegret and A. Merkoçi, Editors. 2007, Elsevier. p. 189-210.
- [6] Gooding JJ, Chow E, The Determination of Metal Ions Using Peptide Modified Electrodes, in *Electrochemical Sensor Analysis*, S. Alegret and A. Merkoçi, Editors. 2007, Elsevier. p. e83-e92.
- [7] Hibbert DB, Systematic errors in analytical measurement results. *J. Chromatogr. A*, **1158**, 25-32 (2007).
- [8] Kilian KA, Bocking T, Gaus K, Gal M, Gooding JJ, Si-C linked oligo(ethylene glycol) layers in silicon-based photonic crystals: Optimization for implantable optical materials. *Biomaterials*, **28**, 3055-3062 (2007).
- [9] Li JF, Hibbert DB, Fuller S, Numerical methods for comparing fresh and weathered oils by their FTIR spectra. *Analyst*, **132**, 792-800 (2007).
- [10] Odenthal KJ, Gooding JJ, An introduction to electrochemical DNA biosensors. *Analyst*, **132**, 603-610 (2007).
Invited education review
- [11] Wong ELS, Gooding JJ, The electrochemical monitoring of the perturbation of charge transfer through DNA by cisplatin. *J. Am. Chem. Soc.*, **129**, 8950-8951 (2007).
- [12] Yu JX, Shapter JG, Johnston MR, Quinton JS, Gooding JJ, Electron-transfer characteristics of ferrocene attached to single-walled carbon nanotubes (SWCNT) arrays directly anchored to silicon(100). *Electrochim. Acta*, **52**, 6206-6211 (2007).

From Bioactive Molecules

- [13] Abeysinghe PM, Harding MM, Antitumour bis(cyclopentadienyl) metal complexes: titanocene and molybdocene dichloride and derivatives. *Dalton Trans.*, 3474-3482 (2007).
Invited Perspective Article
- [14] Angyal SJ, Anderson JE, Craig DC, Inositols: The effect of bulky substituents on conformations. *Aust. J. Chem.*, **60**, 572-577 (2007).
- [15] Kalinowski DS, Yu Y, Sharpe PC, Islam M, Liao YT, Lovejoy DB, Kumar N, Bernhardt PV, Richardson DR, Design, synthesis, and characterization of novel iron chelators: Structure-activity relationships of the 2-benzoylpyridine thiosemicarbazone series and their 3-nitrobenzoyl analogues as potent antitumor agents. *J. Med. Chem.*, **50**, 3716-3729 (2007).
- [16] Maharaj F, Craig DC, Scudder ML, Bishop R, Kumar N, Inclusion of nitriles inside and outside the molecular bowls of tetrabromo calix[4]arene hosts. *J. Inclusion Phenom. Macrocyclic Chem.*, **59**, 17-24 (2007).
- [17] Tripoli R, Cayzer TN, Willis AC, Sherburn MS, Paddon-Row MN, Stereocontrol of intramolecular Diels-Alder reactions by an allylic diphenylcyclopropyl group. *Org. Biomol. Chem.*, **5**, 2606-2616 (2007).
- [18] Broer S, Broer A, Hansen JT, Bubb WA, Balcar VJ, Nasrallah FA, Garner B, Rae C, Alanine metabolism, transport, and cycling in the brain. *J. Neurochem.*, **102**, 1758-1770 (2007).

Our Publications for Quarter 3 continued

From Chemical and Biological Catalyst cluster

- [19] Burling S, Field LD, Messerle BA, Rumble SL, Late transition metal catalyzed intramolecular hydroamination: The effect of ligand and substrate structure. *Organometallics*, **26**, 4335-4343 (2007).
- [20] Dance I, Elucidating the coordination chemistry and mechanism of biological nitrogen fixation. *Chem.- Asian J.*, **2**, 936-946 (2007).
- [21] Field LD, Magill AM, Shearer TK, Dalgarno SJ, Turner P, Mono- and Bis-acetylidoruthenium(II) complexes by controlled metathesis of methylruthenium complexes with acetylenes. *Organometallics*, **26**, 4776-4780 (2007).
- [22] Field LD, Shaw WJ, Clentsmith GKB, A quantitative measure of the ionicity of selected iron hydride species by examination of the deuterium quadrupole coupling constant (DQCC). *J. Organometallic Chem.*, **692**, 3042-3047 (2007).
- [23] Pratt M, Harper JB, Colbran SB, Do (pentaarylcyclopentadienyl)molybdenum(VI) dioxo species catalyse alkene epoxidations? Insights from kinetics data. *Dalton Trans.*, 2746-2748 (2007).
- [24] Patil SN, Craig DC, Liu F, Benzyl 2-((tert-butyl)dimethylsilyloxy)[1-(4-nitrophenyl)-2,5-dioxotetrahydro-1H-furo[3,2-d]oxazol-6a-yl] methyl}acrylate. *Acta Crystallograph. E*, **63**, O3021-U3314 (2007).
- [25] Grunert CM, Goodwin HA, Carbonera C, Letard JF, Kusz J, Gutlich P, Unusual spin transition behavior in 2,6-bis((pyrazol-3-yl)-pyridine) iron(II)-bis-oxalato-platinate(II). *J. Phys. Chem. B*, **111**, 6738-6747 (2007).

Other publication

- [26] Brophy JJ, Goldsack RJ, Copeland LM, Forster PI, Leaf essential oils from *Philothea* species (Rutaceae) in Queensland and northern New South Wales. *J. Essential Oil Res.*, **19**, 364-371 (2007).
- [27] Brophy JJ, Goldsack RJ, Forster PI, Essential oils from the leaves of *Bosistoa* F. Muell. ex Benth. (Rutaceae). *J. Essential Oil Res*, **19**, 249-254 (2007).

Grant Success

In late September the 2008 ARC grants were announced. This was a very good year for the school with three new first CI Discovery grants (won by Graham Ball, John Stride and Elicia Wong), one linkage and three LIEF grant having School of Chemistry applicants (see list below). John Stride's success with winning a Discovery grant is particularly notable as this was only John's second attempt (just missing out last year). Being successful so early represents a fantastic start to his academic career here. Elicia Wong won an Australian Post-Doctoral Fellowship with her Discovery grant. Elicia is a former member of the Gooding group who will be returning from Oxford University. Congratulations is extended to all successful applicants and commiserations to those that were unsuccessful.

ARC Discovery grants

Dr GE Ball, Prof AF Hill (ANU) 2008-2010 (\$386K) An Integrated Synthetic and NMR Spectroscopic Study of Photochemical Organometallic

Dr JA Stride 2008-2010 (\$368K) Porous and Magnetic Networks: Functional materials by form and design

Dr EL Wong 2008-2010 (\$320K), New Strategies for Monitoring DNA-Anticancer Drug Interactions

Other grants

Prof R Amal, Prof PJ Russell, Prof JJ Gooding, Dr BJ Walsh, ARC Linkage 2008-2010 (\$371 K), Numerical Modelling and Experimental Studies to Design and Engineer Nanoparticulate

Prof JJ Gooding and Dr P Thordarson, as part of a large team, 2008 (\$900K), ARC LIEF, High-resolution imaging of live cells and tissue

Dr JA Stride as part of a larger team, 2008 (\$300K), ARC LIEF, Vacuum Ultraviolet Spectrophotometer and Rapid Photoluminescence Mapping System

A/Prof BA Messerle and Dr GE Ball as part of a larger team, 2008 (\$1300K), ARC LIEF, 800 MHz NMR spectrometer for biomolecular structure-function analysis

Beyond our Walls

With the overseas conference season in full flight over July and August School of Chemistry people were their usual active selves and off overseas. Roger Bishop was as ever one of our most adventurous giving the opening plenary lecture entitled “In search of self-resolution during crystallization” with authors Bishop R, Ashmore J, Chan IYH, Craig DC, Nguyen VT, Scudder ML, at the 18th *International Conference on the Chemistry of the Organic Solid State (ICCOSS XVIII)* in Merida Venezuela. Roger also presented a poster entitled “Molecular bricks, pens, grids and spheroids”. Roger still managed to find time to experience the alpine wonders of the Andes (see picture) although the presence of cables suggest he may not have walked to the top.

Margaret Harding and Steve Colbran attended the 13th *International Conference on Biological Inorganic Chemistry (ICBIC)* in Vienna. Margaret spoke on “Increased Cellular Uptake on the Antitumor Metallocene Molybdocene Dichloride” with authors Abeysinghe PM, Lo SC-K, Harding MM, Buck DP, Collins JG as well as being an author on two poster presentations. Steve spoke on “Radical Models for the CuB Centre in Heme-Copper Oxidases”. All the abstracts for these papers were published in *J. Inorg. Biochem.* Margaret also had a published abstract from her contribution to the 234th *ACS National Meeting* in Boston entitled “Antifreeze glycoproteins:

Profile of Berta Litvak, the Chair of the Safety Committee

Berta is one of the many technical staff in the School of Chemistry who fill multiple roles. In the case of Berta, she not only runs and prepares senior lab classes but is also the Chair of the Safety Committee. Chairing this committee is one of the most important jobs in the School as it has prime responsibility for ensuring we are safe in the lab. So with so much to do and so little time, who is Berta and how did she get here. Berta joined the School in June 1980, firstly as

Design of Mimics and Interaction with Membranes” with authors Stok JE, Abeysinghe PM, Han Y, Garner J, Inglis SR, Harding MM. On the way to ICBIC, Steve Colbran stopped over in Singapore and visited Nanyang Technical University and the National University of Singapore (NUS). He presented a seminar at NUS entitled “Life’s Fire: Radical Chemistry & Valence Tautomerism in Models for the CuB Centre of Respiratory Heme-Copper Oxidases”

Jason Harper gave an invited lecture at the 4th *Heron Island Conference, Synthesis and Mechanism: Reactive Intermediates and Unusual Molecules* entitled “Towards an Understanding of Organic Processes in Ionic Liquids” with authors Man BYW, Howe AG, Yau HM, Rosella C, Hook JM, Croft AK, Harper JB.

Justin Gooding was also away from UNSW for a week touring Tasmania giving 6 multimedia lectures to school children entitled “Science Fiction Meets Science Fact” as the Tasmanian Branch of the RACI, 2007 Youth Lecturer.

It wasn’t only the academics that got to travel however. Paul Eggers a Ph.D. student from the Gooding group spent several weeks in Sapporo, Japan working at the University of Hokkaido with a collaborator there, Associate Professor Shen Ye. This visit will allow Paul to put the finishing touches on his Ph.D.

a Laboratory Assistant, but soon after became a Technical Officer and then a Senior Technical Officer in 1995. Berta has a BSc (Chemistry) from UTS, and a DipEdAdmin (Diploma of Educational Administration) from UNSW in 1994 along with some computing qualifications. Berta’s love of teaching makes her an effective and well liked staff member by both students she teaches and the staff with whom she works. - Justin Gooding



Roger Bishop near the top of the Andes at Pico Espejo (4756 metres) in Venezuela



Paul Eggers learning about lab life in Sapporo, Japan



Think safety, think Berta

