

October-December 2007

News from F10NA

Volume 1, Issue 4

The Newsletter of the School of Chemistry UNSW

2007: A good year with lots of positive change

Reading through the first four issues of this inaugural volume of the newsletter it is very clear that 2007 has been a very good year for the School. It was a year full of change, with a new building, new staff and a whole new first year program. It has also been my first year as Head of School - a challenging but rewarding task that is made even more fulfilling by the excellent progress that the School has made.

The teaching year progressed well with students unaware that each week the laboratory classes were running for the first time in their new location. This was in no small part due to an amazing effort by the general staff, because behind the scenes there was an unusual level of equipment failure and preparing lab classes in a new location was a demanding task!

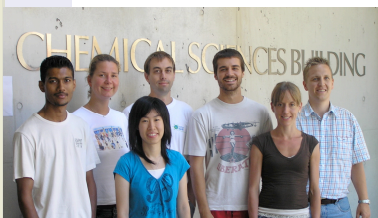
On the research front we had great success with external grants, papers published and PhD students graduated. We graduated one of the largest honours classes in living memory, several of whom are going on to PhDs in the School. We celebrated with a building opening and a new research day.

We were fortunate to welcome two new staff members in Dr Marcus Cole and Dr Palli Thordarson. After a long year we all enjoyed a well earned break over Christmas. I would like to thank all of the staff and students of the School of Chemistry for their outstanding efforts in 2007. Their hard work, dedication and enthusiasm made my job considerably easier. We are looking forward to an equally rewarding 2008, building on our successes in 2007.

Barbara Messerle



The School of Chemistry in November 2007



The Thordarson group after completing their move to UNSW. From left to right: Shiva, Sabrina, Katie, Josh, Danny, Katrine and Palli

Thordarson group arrives at UNSW

The research group of Dr. Palli Thordarson arrived at UNSW from Sydney University in late 2007, early 2008. The group comprises: Dr. Sabrina Dehn (a DAAD Fellow), Shiva Prasad and Josh Peterson (3rd year Ph.D. students), Katie Tong (2nd year Ph.D. student), Danny Goldstein (1st year PhD student who did his undergraduate degree at UNSW in Nanotechnology) and Katrine Qvortrup who is a visiting practicum student. The group's numbers will swell in 2008 with 3 honours

students. The Thordarson group would also like use this opportunity to extend their warmest thanks to everyone who helped them with facilitating their move to UNSW, especially the wonderful technical and administrative support staff at the School of Chemistry, UNSW, including: Joseph, Ian, Barry, Jodee, Rick and Ken! The School would also like to welcome the group and wish them every success at UNSW.

Congratulations to the honours class of 2007

November 2007 saw the honours students in the School of Chemistry, from both the Chemistry and Nanotechnology streams, submit their theses. This marks the end of a four year degree for these students who have contributed greatly to the School of Chemistry during their time here. Congratulations goes to all of them, particularly Daniel Chan and Katherine Sage who received the joint highest mark in the Chemistry stream and Will Rouesnel who was not only the top chemistry student in the Nanotechnology stream, but also received the highest mark for an honours project in the

Nanotechnology programme. Congratulations also go to Oanh Nguyen and Hon Man Yau who have accepted Australian Postgraduate Awards (APAs) to continue as PhD scholars. Other completing honours students continuing as PhD candidates are Will Rousenel, Trung Tuong, Ren Chen and Josh Ginges. Other successes for the honours class include Hon Man representing the School at the RACI Analytical Honours presentation evening and nanostudent Zhi Jun Lim coming second in the Materials Australia Honours oral presentation evening for NSW.

- Jason Harper

Recent Ph.D. graduates

There have been a number of Ph.D. graduates from the School in the last half of 2007. We would like to congratulate the following people on their outstanding achievement:

Danielle Kennedy, supervised by Prof Barbara Messerle for a thesis entitled "Efficient Catalysts for Heterocycle Synthesis - A High Throughout Approach. Danielle has already found employment with CSIRO.

Kris Kilian, supervised by Prof Justin Gooding for a thesis entitled "Chemical and Biological Modification of Porous Silicon Photonic Crystals". Kris is now doing a post-doc at the University of Chicago.

Rongmei Liu, supervised by A/Prof Grainne Moran for a thesis entitled "The

Functionalization of Carbon Nanotubes".

Haryadi, supervised by A/Prof Grainne Moran for a thesis entitled "Porous Hybrid Organic-Inorganic Silica Materials: Preparation, Structural and Transport Properties".

Mandar Deodhar, a Ph.D. student from the Kumar/Black group, who submitted his thesis entitled "Synthesis of Heterocyclic Dimers Derived from Isoflavones and Flavones" in 2007 and is now working as a Senior Chemist at Pharmaxis Ltd.

These successes bringing the total number of Ph.D. graduates from the School in 2007 to 14. Importantly, these 14 people were replaced by an equal cohort of new recruits in 2007.

Our Publications for Quarter 3

The final quarter of 2007 has seen a further 18 refereed journal papers and book chapters released to give a final total of 87 for the year. Special note is to be taken for the paper highlighted in blue by Jason Harper in *Accounts of Chemical Research*. The impact factor of *Accounts of Chemical Research* is 17.113 which is the 2nd highest of all chemistry journals.

- [1] Angyal SJ, in *Advances in Carbohydrate Chemistry and Biochemistry*, Vol. 61, 2008, pp. 29-58.
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- [4] Brophy JJ, Goldsack RJ, Fookes CJR, The volatiles of *Acacia howittii* F. Muell, *J. Essential Oil Res.*, **19**, 457-459 (2007).
- [5] Buckley AN, Skinner WM, Harmer SL, Pring A, Lamb RN, Fan LJ, Yang YW, Examination of the proposition that Cu(II) can be required for charge neutrality in a sulfide lattice - Cu in tetrahedrites and sphalerite, *Canadian J. Chem.*, **85**, 767-781 (2007).
- [6] Ebrahimi D, Li JF, Hibbert DB, Classification of weathered petroleum oils by multi-way analysis of gas chromatography-mass spectrometry data using PARAFAC2 parallel factor analysis, *J. Chromatogr. A*, **1166**, 163-170 (2007).
- [7] Garner J, Harding MM, Design and synthesis of alpha-helical peptides and mimetics, *Org. Biomolec. Chem.*, **5**, 3577-3585 (2007).
- [8] Goh WK, Black DS, Kumar N, Synthesis of novel 7-substituted 5,6-dihydroindol-2-ones via a Suzuki-Miyaura cross-coupling strategy, *Tetrahedron Lett.*, **48**, 9008-9011 (2007).
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- [13] Mahon AB, Craig DC, Try AC, 9-methyl-2,6-di-p-tolyl-2,3,6,7-tetrahydro-1H, 5H-pyrimido[5,6,1-ij]quinazoline, *Acta Crystallographica E*, **63**, O4311-U3301 (2007).
- [14] Mahon AB, Craig DC, Try AC, 1,1'-methylenebis(naphthalen-2-amine) methanol solvate, *Acta Crystallographica E*, **63**, O4341-U3607 (2007).
- [15] McGregor BA, Postle R, Worsted cashmere top and yarns blended with low or high curvature superfine merino wool, *Textile Res. J.*, **77**, 792-803 (2007).
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- [17] Yang WR, Thordarson P, Gooding JJ, Ringer SP, Braet F, Carbon nanotubes for biological and biomedical applications, *Nanotechnology*, **18** Art. No. 412001 (2007).
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Grant Success

Steve Colbran, with co-author Brynn Hibbert, has had a major grant success winning a Petroleum Research Fund AC grant for fundamental research worth 100,000 \$USD for a project entitled “*Discovery of Molecular Oxidation Catalysts using Metallo-Enzyme Mimicry and Combinatorial Chemistry*”. The Petroleum Research Fund is a granting scheme administered by the American Chemical Society, so Steve and Brynn have the rare distinction of winning an international competition for funding. This is no mean feat as these are highly sort after grants with the vast majority going to US based ‘local’ scientists. This is illustrated by the fact that of the 176 grants supported in 2007 only 4 were awarded to researchers outside North America.

In late December the University announced the successful Major Research Equipment and Infrastructure grants. The School was very successful with three grants led by Chemistry staff. Our new arrival Palli Thordarson was the first author on a \$56,000 grant for a Protein Purification System. Naresh Kumar won \$97,000 for a Semi-Preparative HPLC system and Justin Gooding was the first author on a \$133,000 grant for a FTIR Microscope and Spectrometer. All this new equipment will be located in the Analytical Centre.

Highly Downloaded Paper

During the month of November a paper by James Garner and Margaret Harding (*Org. Biomol. Chem.* **5** 3577-3585 (2007)) entitled “Synthetic Mimics of alpha-Helical Peptides” was one of the 10 most downloaded articles in OBC. One imagines the fantastic image related to this paper on the journal cover (see opposite) helped attract readers to the paper.



Paper Success

A paper by Ph.D. student Kris Kilian, Justin Gooding and co-workers on using porous silicon photonic crystals for detecting protease enzymes (*ACS Nano* **1** 355-361 (2007)) has been the subject of considerable publicity from the journal. The paper was the subject of a 5 page perspectives piece in the same issue by the leader in the field Michael Sailor (*ACS Nano* **1** 248-252 (2007)) outlining why the published work was so significant. *ACS Nano* also made a podcast interview with Justin related to the paper which you can hear at: <http://pubs.acs.org/journals/ancac3/podcasts/index.html> and a YouTube style video of Kris talking about the paper which you can see at:

<http://www.acsnanotation.org/NanoTubePlayer/tabid/131/VideoId/32/Default.asp>

Outreach

The work of Naresh Kumar and colleagues to establish an effective outreach program is continuing apace. In the last three months Naresh and retired staff member Peter Southwell-Keely visited Sydney Boys High School and gave a talk entitled “Production of Materials”. The topic is included in the HSC and was exceedingly helpful to the students. Previous visits by Naresh and colleagues to other schools saw three year 10 students gain work experience in the School of Chemistry. Lieu Chi Nguyen and Eromanga Adermann from Sydney Girls High School and Nicholas Konstandaras from Menai High spent most of their time working with PhD students in the School (in particular Kasey, Ruth, Brad) from the Messerle and Kumar groups. The students participated in catalysis and synthetic chemistry research activities and learned analytical techniques used in chemical characterisation. We are hoping such experiences will excite these year 10 students about the possibilities of doing scientific research.

Beyond our Walls

In November Professor Roger Bishop traveled to Taiwan to be involved in the Asian Crystallographic Association conference in Taipei where he presented a talk entitled “Molecular Bricks, Pens, Grids and Spheroids from Diheteroaromatic Hosts”. Roger’s participation did not stop there. He was also co-organiser and co-chair with Prof. Keiichiro Ogawa of the University of Tokyo of a mini-symposium at the conference on Dynamic Aspects of Molecular Crystals”

Steve Colbran attended the 2008 “Protein Cofactors, Radicals and Quinones” Gordon Research Conference held in Ventura, California in January. He was discussion leader for the “Complex Redox Cofactors – Mechanism” sessions and presented a poster entitled “Radical models for the Cu_B centre in respiratory heme-copper oxidases” with authors S. Colbran, D. Craig, S.-T. Lee, and D. Lonnon.

Naresh Kumar and his group have had a busy few months delivering a keynote lecture at the *21st International Congress for Heterocyclic Chemistry* in Sydney entitled “Biomimetic Fouling Control: Development of Novel Antimicrobial Agents”. He also presented a lecture at the *12th Asian Chemical Congress (12ACC)* in Kuala Lumpur entitled “Synthesis of Some Dimeric Flavonoid Natural Products” and an invited oral presentation at the *International Symposium on Catalysis and Fine Chemicals* at Nanyang Technical University, Singapore 2007.

Profile of Edwina Hine, RACI NSW Branch Coordinator

In late 2007 the coordination of the RACI NSW Branch Office was handed over from Andrew May to Edwina Hine. The RACI NSW Branch Coordinator role has been slightly redefined in recognition of the increasingly corporate structure of the Institute and in an effort to better serve members. Edwina, who is an RACI member herself and very active

Kasey Wood and Ren Chen, students from Kumar/Black group, gave oral presentations at the *RACI One-Day Natural Products Group Symposium 2007*. Kasey had a great day as she was the recipient of the Best Oral Presentation prize at the symposium. Well done Kasey!

Another very active group has been the Messerle group. Joanne Ho has spent three months researching in Singapore at the Institute for Chemical and Engineering Sciences as part of a long term collaboration with Dr. Christina Chai. Joanne also presented her work in Singapore at the *International Symposium on Catalysis and Fine Chemicals*. Joanne and Bradley Man both gave oral presentations at the *Reactive Organometallics Symposium* at ANU in November

Justin Gooding was lucky enough to spend six weeks in New Zealand as an Erksine Fellow at the University of Canterbury in Christchurch. As part of the fellowship Justin gave two lecture courses to 3rd and 4th year students in the Department of Chemistry as well as a number of seminars in the South Island. He was also lucky enough to indulge his passion for bush walking. In early December Justin was out and about again giving a keynote presentation at the *RACI R&D topics* meeting at Flinders University in Adelaide where he was presented with the Lloyd Smythe medal, the medal of the Analytical Division. Justin spoke on “Biosensors: Towards Portable Analytical Devices”

in the RACI NSW Young Chemists Group, has taken on the daunting task and is looking forward to maximising interaction with the School of Chemistry. Please drop by the Office, Ground Floor, Dalton Building, and make yourself known to Edwina.

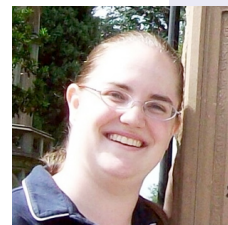
– Roger Read



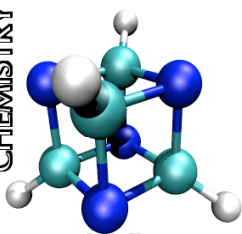
Steve Colbran enjoying the conference on the pier at Ventura in California



Justin receiving the 2007 RACI Lloyd Smythe Medal



Edwina Hine from the RACI Office



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Professor Messerle
looking justifiably
pleased.

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Significant Postings

Ph.D. student Mahiuddin Alamgir who is supervised by Naresh Kumar and David Black has achieved the extraordinary honour of being appointed to the editorial board of the African Journal of Biochemistry Research. He is also the corresponding author of a paper in *Topics in Heterocyclic Chemistry* published in the last quarter. These are signs of an excellent academic career to follow.

Congratulations Mahiuddin!

Steve Colbran also accepted an invitation to the editorial board of *Research Letters in Inorganic Chemistry*. Meanwhile Justin Gooding was added to the Advisory Board of the Elsevier journal *Sensors and Actuators B*.

Training Scholarships winners

In 2007 UNSW established Commercial Training Scheme (CTS) Scholarships which enabled recipients to enrol in a Graduate Certificate in Research Management and Commercialisation in Semester 1, 2008. This is a full fee paying course and therefore the scholarship is valued at \$10000. Our own Kasey Wood and Mohammad Choucair were lucky recipients of this scholarship. Congratulations Kasey and Mohammad!

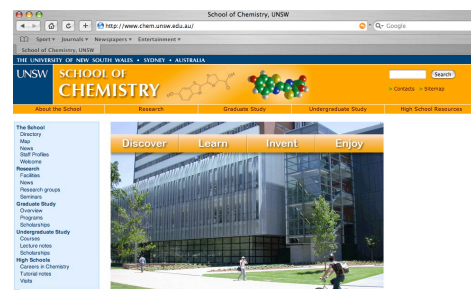
Congratulations to our newest Professor

Very special news came through to the School in December, our Head of School Barbara Messerle was promoted to Professor. We were all absolutely delighted as it was just reward for somebody who has been an enormous contributor to the School since she arrived in early 1999. Barbara came to UNSW as a Senior Research Fellow and very quickly built up one of the most vibrant groups within the School with several members winning University

New Web Page

The School website has recently undergone a major update (see screen capture below). A new home page highlights the research strengths and facilities of the School, the opportunities for learning in the School, and the wonderful living environment of Sydney. The research groups page links to many new mini-websites within the School site showcasing our current research, and the research news page lists our significant grant successes and other ways in which our research has been acknowledged. The site emphasises the theme of Chemistry being 'The Creative Science.' Please drop by and have a look:
www.chem.unsw.edu.au

- Ron Haines



The home page of our stylish new web page

Medals and producing high quality PhD theses. She has also had pivotal roles in teaching and administration in the School including holding the position of Postgraduate Director. At the beginning of 2007 she took over the role as Head of School and provided the leadership that has enabled the School to have an exceedingly successful year. Congratulations from the entire School Barbara on a well deserved promotion!