

January-March 2008

# News from F10NA

Volume 2, Issue 1

The Newsletter of the School of Chemistry UNSW

## 2008: Building on a Successful 2007

Welcome to the first issue of the 2<sup>nd</sup> volume of "News from F10NA". If you had the opportunity to read the four issues from the first volume last year you would have had the opportunity to read about the excellent progress made by the staff and students in the school during 2007.

Our new building is now operating optimally and high quality research results are being produced right across the building. The teaching labs are running experiments for the 2<sup>nd</sup> time in the new building so most teething problems have been ironed out.

So what does 2008 have in store? Our teaching sessions have been reduced from 14 to 12 weeks which has seen considerable reorganization of courses. The change was the catalyst for a revision of our 1<sup>st</sup> year courses last year and sees a revision of our higher year courses this year. We also have the largest intake of new Ph.D. students anybody can

### Meet the School's High Achieving Students

The 12<sup>th</sup> of March was a special day for the School of Chemistry. The Gallery 1 in the Scientia Building was completely packed with staff, students and their family and friends for the official 2008 School prize giving ceremony, where the high achieving chemistry students from 2007 receive awards for performance in 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and honours year of their degrees. Congratulations to all prize winners!

This year was particularly special as two new post-graduate prizes were launched, named in honour of two of the School's most eminent chemists, Prof. Michael Paddon-Row and Prof David Black. The Paddon-Row PhD scholarship for the top ranked local student was awarded to Oanh Nguyen

remember, 14 in total in session 1 alone. In research we are targeting an increase in quality and numbers of papers as well as more industrial funding.

We have already had some highlights in 2008. School member Prof Margaret Harding has been recognized for her excellent work as Dean of the Graduate Research School by also being given the portfolio of Pro-Vice-Chancellor (Research Strategy). The school prize giving for 2008 has occurred and Naresh Kumar and colleagues organized our very popular Outreach program with 220 students from PLC and Sydney Girls spending a day here. Our very popular General Education course, Science and Cinema, has been and gone with the enrolment cap of 300 students reached well before enrolments closed. Also a number of papers published in 2008 have already attracted attention. These few highlights suggest 2008 is going to be a more successful year than 2007 - Barbara Messerle

while the Black PhD scholarship for the top ranked international student went to Bin Guan. We were extremely fortunate that both Prof Paddon-Row and Prof Black presented the awards to the respective students.

Two new prizes were also awarded - the Cetec Prize for the best honours thesis went to Katherine Sage, and the School of Chemistry Prize for Excellence and Enthusiasm in Chemistry for a Year 10 student was awarded to Clare Galvin. Prof Stephen Angyal was also present to award the Angyal Medal to the top ranked honours students from 2007 which was awarded to both Katherine Sage and Daniel Chan. A full list of the 2007 prize winners can be found at <http://www.chem.unsw.edu.au/undergrad/ugprizes.html>



Standing (left to right): Prof Margaret Harding (Dean of the Graduate Research School), Erika Davies, Christopher Miller, SJ Chan, Amelia Gandar, David Hvasanov, Clare Galvin, David Waddington, Prof Barbara Messerle (Head of School)  
Kneeling: Bin Guan, Alexander Mc Skimming, Hon Man Yau, Oanh Nguyen, Daniel Chan

## *Bumper intake of new research students*

The beginning of 2008 sees the largest Ph.D. intake the school has had in recent years. The total of new students for the first intake of 2008 is 14 students. This intake comprises 10 local students and 4 international students. The four international students come from India, China and Malaysia. Of the local students several came from our chemistry and nanotechnology honours programs but quite a few came from other Australian universities including Sydney and Melbourne Unis.

The new graduate students are Pauline Michaels, Josh Ginges, Will Rousenel, Muthu Chockalingam, Bin Guan and Sook Mei (Naomi) Khor (all Gooding group), Sherman Chandramathi (Harding), Honman Yau (Harper), Ren Chen (Kumar), Oanh

Nguyen (Messerle), Nam Trung Tuong and Maggie Ng (Stride) plus Katie Tong and Daniel Goldstein who transferred with Palli Thordarson from Sydney Uni.

The research student cohort was also swollen by 19 new honours students. Eleven of these new honours students came via the Nanotechnology program and the other 8 from Chemistry. It is very pleasing to us that the strong honours intake we experienced last year has continued in 2008. We think the nice working environment helps in attracting students but more important still is the vibrant research community the new students and already enrolled students bring to our school. The School welcomes all the new students. We wish you every success and please remember we are all here to help you have a fruitful and enjoyable time at UNSW.

## *Internationally Funded Research Fellows*

The School had some excellent news during the first quarter of 2008 with two announcements related to international fellowships which have brought post-docs to UNSW. Sharon Rivera recently arrived on a National Science Foundation (USA) International Research Fellowship to work with Dr. John Stride. Sharon comes to us from The State University of New York where she worked with Dr. Linda Jacob on "Synthesis of Heterocyclic Selenocyanates". Sharon is currently adjusting to the lack of snow for this time of year but is looking forward to understanding cricket, rugby and Aussie Rules which are all sports alien to her. Sharon, who is currently sitting in the level 1 PG room, invites you all to come and

explain the rules, chat about Chemistry or enlighten her on Australia.

Dr. Sabrina Dehn, a post-doctoral fellow working with Dr. Palli Thordarson is the other recipient of good news from funding sources. Already at UNSW, Sabrina was awarded a one year extension of her DAAD Fellowship. The DAAD can be translated to the German Academic Exchange Service and serves to promote international academic exchange with Germany. While at UNSW, Sabrina with Palli is working on anion-sensitive self-assembled gels and using lanthanides to enhance their stability. We welcome Sharon and are very happy Sabrina is staying with us longer.

## *Distinguished visitor – Professor Leiv Sydnes*

Professor Leiv Sydnes, University of Bergen, Norway is currently visiting the School of Chemistry, as a Visiting Professorial Fellow until 12 May 2008.

Professor Sydnes has very active research interests in organic photochemistry and cyclopropane chemistry, and environmental projects related to degradation of natural and anthropogenic organic compounds by natural processes in the marine environment. He has published over 120 refereed journal articles and eight book chapters.

Professor Sydnes has also written ten high

school texts in Chemistry, two textbooks for chemical colleges, and four books covering laboratory work. He has been very active in outreach into high schools and made at least ten television programs for general public viewing about chemistry topics.

Professor Sydnes was Vice Rector for Education at the University of Bergen and amongst his many distinguished roles in professional associations he was the president of the International Union of Pure and Applied Chemistry in 2004-2005.

- David Black



Sharon Rivera



Professor Leiv Sydnes

## Our Publications for Quarter 1

Chemistry made a healthy start to publications in 2008. Congratulations is extended to all authors. Papers in really high impact journals such as *Chemical Communications* and *Angewandte Chemie* are marked in blue.

### From Molecular Devices cluster

- [1] Gooding JJ, Advances in interfacial design sensors: Aryl diazonium salts for electrochemical biosensors and for modifying carbon and metal electrodes, *Electroanalysis*, **20**, 573-582 (2008).
- [2] Kilian KA, Bocking T, Gaus K, Gooding JJ, [Introducing distinctly different chemical functionalities onto the internal and external surfaces of mesoporous materials](#), *Angew. Chem.-Int. Ed.*, **47**, 2697-2699 (2008).
- [3] Kilian KA, Bocking T, Lai LMH, Ilyas S, Gaus K, Gal M, Gooding JJ, Organic modification of mesoporous silicon rugate filters: the influence of nanoarchitecture on optical behaviour, *Int. J. Nanotech.*, **5**, 170-178 (2008).
- [4] Magnani N, Paoluzi A, Pareti L, Stride JA, Inelastic neutron scattering study of Pr<sub>2</sub>Co<sub>12</sub>Fe<sub>5</sub>, *J. Phys. Cond. Matt.*, **20** Art. No. 104222 (2008).
- [5] Kiani A, Alpuche-Aviles MA, Eggers PK, Jones M, Gooding JJ, Paddon-Row MN, Bard AJ, Scanning electrochemical microscopy. 59. Effect of defects and structure on electron transfer through self-assembled monolayers, *Langmuir*, **24**, 2841-2849 (2008).
- [6] Lee JK, Cho JM, Shin WS, Moon SJ, Kemp NT, Zhang H, Lamb R, The stability of PEDOT : PSS films monitored by electron spin resonance, *J. Kor. Phys. Soc.*, **52**, 621-626 (2008).
- [7] Quinton JS, Deslandes A, Barlow A, Shapter JG, Fairman C, Gooding JJ, Hibbert DB, RF plasma functionalized carbon surfaces for supporting sensor architectures, *Curr. Appl. Phys.*, **8**, 376-379 (2008).

### From Bioactive Molecules

- [8] Clayton KA, Black DS, Harper JB, Mechanisms of cyclisation of indolo oxime ethers. Part 2: Formation of ethyl 6,8-dimethoxypyrazolo[4,5,1-hi]indole-5-carboxylates, *Tetrahedron*, **64**, 3183-3189 (2008).
- [9] Thayumanavan R, Hawkins BC, Keller PA, Pyne SG, Ball GE, A mild and general method for the synthesis of 5-substituted and 5,5-disubstituted fulleroproline, *Org. Lett.*, **10**, 1315-1317 (2008).
- [10] Brophy JJ, Goldsack RJ, Craven LA, Ford AJ, Godfree R, The leaf oils of the *Melaleuca minutifolia* F. Muell. group (Myrtaceae), *J. Essential Oil Res.*, **20**, 163-168 (2008).
- [11] Pearson EL, Willis AC, Sherburn MS, Paddon-Row MN, Controlling cis/trans-selectivity in intramolecular Diels-Alder reactions of benzo-tethered, ester linked 1,3,9-decatrienes, *Org. Biomol. Chem.*, **6**, 513-522 (2008).
- [12] Rawling T, McDonagh AM, Colbran SB, Synthesis, electrochemistry and spectroscopic properties of ruthenium phthalocyanine and naphthalocyanine complexes with triphenylarsine ligands, *Inorg. Chim. Acta*, **361**, 49-55 (2008).
- [13] Nasrallah FA, Garner B, Ball GE, Rae C, Modulation of brain metabolism by very low concentrations of the commonly used drug delivery vehicle dimethyl sulfoxide (DMSO), *J. Neurosci. Res.*, **86**, 208-214 (2008).
- [14] Ashmore J, Bishop R, Craig DC, Scudder ML, 2,3,10,11-tetramethoxy-6,7,14,15-tetrahydro-6,14-methanocycloocta[1,2-b; 5,6-b']diquinoline, *Acta Crystallograph. E*, **64**, O48-U2922 (2008).
- [15] Chan IYH, Bishop R, Craig DC, Scudder ML, Yue W, 8-Methyl-5-methylidene-2-oxotricyclo[5.3.1.1.3,9]dodecan-endo-8-ol, *Acta Crystallograph. E*, **64**, O841 (2008).
- [16] Harper JB, Pyridines and their benzo derivatives: Structure, in *Comprehensive Heterocyclic Chemistry III: Six-Membered Rings with One Heteroatom with Fused Carbocyclic Derivatives*, D. StC. Black, Editor, 2008, Elsevier: Oxford,; Vol. 7, pp 1-38.
- [17] Edwards GL, Balasubramanian M, Murugan R, Six-membered Rings with One Phosphorous Atom in *Comprehensive Heterocyclic Chemistry III: Six-Membered Rings with One Heteroatom with Fused Carbocyclic Derivatives*, D. StC. Black, Editor, 2008, Elsevier: Oxford,; Vol. 7, pp 1003-1038.
- [18] Wangensteen H, Alamgir M, Duong GM, Grønhaug TE, Samuelsen AB, Malterud KE, Chemical and biological studies of medicinal plants from Sundarbans mangrove forest, in *Advances in Phytotherapy Research*, M. Eddouks, Editor, 2008, Research Signpost: Kerala, India. Pp 59-78.

### From Chemical and Biological Catalyst cluster

- [19] Field LD, Li HL, Dalgarno SJ, Turner P, [The first side-on bound metal complex of diazene, HN=NH](#), *Chem. Comm.*, 1680-1682 (2008).
- [20] Alshahateef SF, Bishop R, Craig DC, Kooli F, Scudder ML, The Janus-like behaviour of sulfur in substituted diquinoline inclusion crystal structures, *CrystEngComm*, **10**, 297-305 (2008).
- [21] Breadmore MC, Hodgson R, Kennedy DF, Messerle BA, Fast CE for combinatorial catalysis, *Electrophoresis*, **29**, 491-498 (2008).
- [22] Field LD, Sternhill S, Kalman JR, *Organic Structures and Spectra*, 4<sup>th</sup> Edition, Wiley, New York (2008)

### Other Publications

- [23] R.J. Goldsack, *Aromatic Woods: Their Products and Uses in A Guide to More Useful Woods of the World*, JH Flynn Jr, Editor. 2007, Forest Products Society: Madison. p. 219-261.

## Paper successes

The consistently high quality research coming from the school over a long period of time is demonstrated by accolades a number of papers from the school have received over the last quarter.

A paper that receives 50 citations is regarded as a highly cited paper, one that receives 100 citations is a citation classic and 200 citations is a very rare achievement. Two papers from the school have just exceeded 200 citations and have done so in less than five years. These papers are by Naresh Kumar and co-authors entitled "Attenuation of *Pseudomonas aeruginosa* virulence by quorum sensing inhibitors" in *EMBO J* **22** 3803-3815 (2003) and Justin Gooding, Brynn Hibbert and co-authors entitled "Protein electrochemistry using aligned carbon nanotube arrays" in *J. Am. Chem. Soc.* **125** 9006-9007 (2003) have both exceeded 200 citations in the last quarter.

200 citations however seems small compared with a book edited by our own Professor Roger Bishop with David MacNicol and Fumio Toda entitled "Comprehensive Supramolecular Chemistry, Volume 6, Solid-state Supramolecular Chemistry: Crystal Engineering", Pergamon Press (1996). This book has just exceeded 1250 citations since publication.

Also on the citation front, carbon nanotube modified electrodes is clearly very hot. The papers from the Gooding group "Nanostructuring Electrodes with Carbon Nanotubes: A Review on Electrochemistry and Applications For Sensing", *Electrochim. Acta* **50** 3049-3060 (2005) and "Achieving Direct Electrical Connection to Glucose Oxidase using Aligned Single Walled Carbon Nanotube Arrays", *Electroanalysis*,

**17** 38-46 (2005) were the most cited and 2<sup>nd</sup> most cited papers from 2005 by the end of 2007 for these journals respectively.

It is not just with citations that recognition for our papers have been received. A couple of papers just published from the school have been highlighted as highly significant in other journals or magazines. A paper by Field LD, Li HL, Dalgarno SJ, Turner P, *Chem. Comm.* 1680 (2008) was highlighted in the RSC's magazine *Chemical Sciences* for making an iron complex in which, for the first time ever, a diazene ligand is bound to the metal side-on. Also attracting the interest of the popular science press was a paper by Kilian KA, Böcking, K. Gaus, J.J. Gooding, Introducing Distinctly Different Chemical Functionalities onto the Internal and External Surfaces of Mesoporous Materials, *Angew. Chem.* **47** 2697-2699 (2008) which was highlighted in the ACS magazine *Chemical and Engineering News*, the RACI magazine *Chemistry in Australia* as well as in *Nature Materials*. This paper is regarded as significant as being able to modify nanoporous materials on the inside and outside with different chemistry is an important advance for drug delivery, nanoporous filters and for cell-based biosensors. The latter is the objectives of the Gooding group's research.

A future citation classic from the school appears to be a 2007 paper by Jason Harper and colleagues from the highly prestigious journal *Acc. Chem. Res.* **40**, 1138-1145 (2007) on ionic liquids was "a most-accessed article" for the 4<sup>th</sup> quarter of 2007.

Congratulations to all the authors from all these papers.

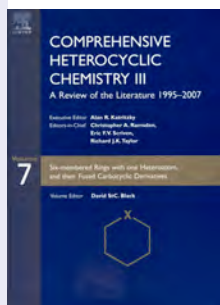
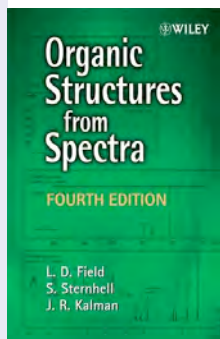
## New Chemistry Books

Two new chemistry books have recently hit the shelves in which UNSW Chemists have made a major contribution. Our Deputy Vice Chancellor of Research and UNSW Chemist, Prof Les Field with S. Sternhill and JR Kalman have published the fourth edition of their book Field LD, Sternhill S, Kalman JR, *Organic Structures and Spectra*, 4<sup>th</sup> Edition, Wiley, New York (2008).

Another new book series involving UNSW chemists is "Comprehensive Heterocyclic Chemistry III: A Review of the Literature

1995-2007". "Volume 7: Six-membered Rings with one Heteroatom, and their Fused Carbocyclic Derivatives" was edited by our very own Prof David Black with contributed chapter from Jason Harper entitled "Pyridines and their Benzo Derivatives: Structure" and another from Gavin Edwards with M Balasubramanian and R Murugan entitled "Six-membered Rings with One Phosphorous Atom".

We congratulate all authors and editors on their achievement.



## Beyond our Walls

Chemists from UNSW attended the International Conference on Nanoscience and Nanotechnology in Melbourne between February 25<sup>th</sup> to 29<sup>th</sup> *en mass* with members from four research groups associated with the Molecular Devices research cluster giving presentations. Justin Gooding was an invited speaker while Palli Thordarson, Josh Peterson and Katrine Qvortrup (Thordarson group) and Mohammad Choucair (Stride group) also gave oral presentations. Poster presentations were given by Simone Ciampi, Albert Ng and Leo Lai from the Gooding group, Katie Tong, Daniel Goldstein and Shiva Prasad from the Thordarson group, Tom Ellis from the Stride group and Rongmei Liu from the Moran group. The real highlight of the conference was Katie Tong winning a poster prize for her poster entitled “*Anion responsive self-assembled gels*”. Congratulations are extended to Katie in particular and all the presenters in general.

The ICONN conference was preceded and followed by two in house meetings. Earlier in February UNSW hosted the International Research Workshop which was a three day meeting that brought research leaders from all over Asia to UNSW to explore potential collaborations with UNSW academics. School involvement included presentations from Naresh Kumar and Justin Gooding, and Barbara Messerle and Palli Thordarson as a rapporteurs.

The School of Chemistry was a host for the

## Obituary

The School recently learnt of the sad news of the loss of one of our alumni, Rodney Earle Sue who was born 30th July 1961. Rodney was a student of Chemistry and Mathematics and graduated with Honours here at UNSW in 1984. Rodney pursued his passion for Chemistry at UNSW and was awarded his Ph.D in 1990 under the guidance of Michael Gallagher for his research into Synthetic approaches to bridgehead phosphorus compounds. During this time Rodney contributed to the School through teaching undergraduate students and his interaction with members of staff.

Rodney was well known to both his fellow graduate students and to many undergraduate students whose laboratory training he oversaw as a teaching assistant. Rodney was always extremely generous with his time as

first Australian Bioconjugate Chemistry Workshop on the 27th March 2008. This meeting was organised and chaired by Dr. Pall Thordarson with over 40 delegates spending a whole day hearing exciting talks about the newest developments in this emerging area of research. Keynote speakers included Prof. Alan Rowan from Nijmegen, The Netherlands, Prof. Paul Alewood from University of Queensland, Prof. Nick Dixon from Wollongong University, Dr. Richard Payne from the University of Sydney, Dr. Volga Bulmus from CAMD/BABS at UNSW and our own Prof. Justin Gooding as well as a number of visitors from ANU.

UNSW chemists also went to OZOM4 - 4th Australian Organometallic Conference *en mass*. Oral presentations were given by Livia Allen, Alison Magill and Hsiu Lin Li from the Field group, Serin Dabb, Michael Page and Kat Sage from the Messerle group, Peter Gray from the Colbran group and Graham Ball.

Hsiu Lin Li from the Field group has been particularly busy as in March she also presented a poster at “Organometallics at the Centre” in Cancun Mexico.

Brynn Hibbert was lucky enough to go to Rome in February as part of his IUPAC duties where he gave the opening address entitled “Overview of the IUPAC metrological traceability project” at the IUPAC-SSED Workshop on ‘Metrological traceability of solubility data’.

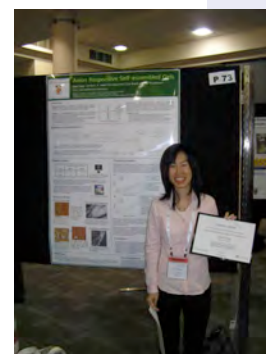
a chemist (given his demanding postgraduate schedule) and was always ready to share a joke. His interests included figure skating and sharing his famous Sue family recipes. It was Rodney’s second postdoctoral fellowship that took him to the UK where he met and married Diane. In the UK Rodney began his career in Computer Science and was appointed Principal Lecturer of the Computer Science Department, the University of Greenwich where he continued his research in the area of Teaching and Learning.

Rodney was a devoted father and husband and is survived by his wife Diane and two sons Christopher and James.

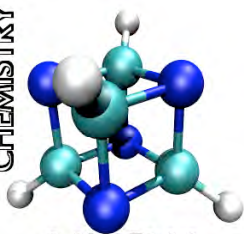
Rodney will be missed by those of us who knew him at UNSW. All of us extend our deepest sympathies to his surviving family.



*The large contingent of UNSW Chemists at ICONN*



*A delighted Katie Tong beside her award winning poster from ICONN*



UNSW

## School of Chemistry UNSW

The University of New  
South Wales, Sydney,  
NSW 2052

Phone:  
+61-2 9385 4666

Fax:  
+61-2-9385 6141



*Sam Knight and his poster*



*PhD student Ren Chen makes some friends at the School Outreach day*

**Comments and suggestions  
to:**  
[justin.gooding@unsw.edu.au](mailto:justin.gooding@unsw.edu.au)

Want to know more!

See us at:

[www.chem.unsw.edu.au](http://www.chem.unsw.edu.au)

### *RACI Award*

Our Head of School Professor Barbara Messerle had been awarded the Royal Australian Chemical Institute New South Wales Branch President's Award for 2008. Barbara received the award for her outstanding support of the NSW Branch Office and activities, through the School of Chemistry at The University of New South Wales. The presentation took place at the Annual President's Dinner, which was held on Saturday, 16 February 2008, at which the guest speaker was our former Head of School, Professor Robert Lamb, now Facility Director, Australian Synchrotron, Melbourne.

### *Conference Announcements*

The NSW Southern Highlands Conference on Heterocyclic Chemistry, will be held at Peppers Manor House, Moss Vale, 31 August - 2 September. This is a fully residential conference with 6 invited speakers, 2-3 senior postgraduate lectures and a formal poster session. For further information contact A/Prof Roger Read, [r.read@unsw.edu.au](mailto:r.read@unsw.edu.au), Dalton Room 227.

UNSW will also host the Electrochemistry Division of the RACI Symposium between November 27-28. The theme of the workshop is "New Materials and New Methods in Electrochemistry". The plenary speaker will be Prof Eric Bakker from Curtin University. For further information contact Prof Justin Gooding, [Justin.gooding@unsw.edu.au](mailto:Justin.gooding@unsw.edu.au), Dalton 132.

### *Outreach, Reaching Further and Wider*

The School of Chemistry hosted a group of Year 10 science students from Sydney Girls High School on 19 February and Pymble Ladies College on 28 March. There were 150 students from Sydney Girls High School and 70 students from Pymble Ladies College, and they spent a full day at the Chemistry laboratories and Analytical Centre.

The girls took an active part in chemistry experiments, which involved fatty acid analysis of an oil sample, preparation of biodiesel, analysis of water contamination by ICP-MS and NMR analysis of an unknown white powder.

They showed a great enthusiasm in Chemistry and asked a lot of questions. Pymble Ladies College have already requested a second visit later this year.

Our outreach did not however stop there. Through his web page on fractals, Brynn Hibbert attracted the interest of Sam Knight, an 8<sup>th</sup> grade student in Florida. With some help from Brynn, Sam performed a research project and presented his results as a high quality poster on the "Synthesis and Characterization of Diffusion Limited Aggregates" at a science fair. All we can say Sam is well done, we are in awe of your scientific talents.

### *High Flying UNSW Chemist Receives a Big Promotion*

The Vice-Chancellor of the University of New South Wales recently announced that Professor of Chemistry Margaret Harding has been promoted to Pro-Vice-Chancellor (Research Strategy), a position she will hold in conjunction with her current position as Dean of the Graduate Research School (GRS). The position of Pro-Vice-Chancellor (Research Strategy) is a newly created

position that recognizes the fantastic strategic and organization skills Margaret has demonstrated with establishing the GRS. Margaret was appointed as the inaugural Dean of the GRS and she and her team have revolutionized with great success how UNSW administers all aspects of the post-graduate process. The School of Chemistry congratulates Margaret on her promotion.