

May-August 2008

Volume 2, Issue 2

## News from F10NA

The Newsletter of the School of Chemistry UNSW

### *Research Students Take Centre Stage*

Welcome to the special student issue of "News from F10NA" which is aimed to coincide with the School Research Day on August 28th where students from within the School will present posters of their research. Potential honours and PhD students are invited to attend and speak with supervisors and research students in the School about their research and potential projects for the coming year. Last year was the first of these Research Days. This year poster prizes will be awarded to the three best posters related to each of the School's research themes, Molecular Devices, Bioactive Molecules and Chemical and Biological Catalysis.

This issue is the first to start going out to alumni of the school and we couldn't think of a better way of letting our former members know how well the School is doing than with an issue celebrating our current students. Research students are the life blood of any school and our students are continually doing us proud, as this issue shows with acknowledgement of a number of prizes won at both International and

UNSW level.

We have also graduated a bumper crop of new doctors in the last few months. Some students in the School have been off traveling the globe telling people about their research and/or conducting research at some of the world's premier research facilities. This issue also carries news of recently arrived PhD students who will continue to take us from strength to strength and recognition of the excellence of recent papers our students have produced. We are striving to make connections with our future and our past and so we tell you about our Outreach program which now stretches to country NSW and we bring you news of how well one of our former students is going. This 'where are they now' feature will be a regular of the newsletter for some time to come. Finally I want to thank all our past and present students for their amazing contribution to the School which underpins everything we do.

- Barbara Messerle

### *UNSW Chemistry PhD students win International Prizes*

One of the undoubted strengths of the School of Chemistry at UNSW is the continued hard work of the postgraduate students, enrolled mostly in PhD programs under academics of the School. The work of three such students has recently been recognised by the award of international prizes. Firstly, Kittiya Muaksang, supervised by Professor Brynn Hibbert, won the International Technical Division for Reference Materials Student Prize of the Association of Analytical Communities, for her report entitled "Development of a High Accuracy Method for Nitrofurans in Prawns and its Application for the Certification of a Candidate Reference Material". Her prize saw her invited to the Annual Meeting of the Association in Dallas, Texas this September to receive her award. A second prize was picked up in July by Joanne Ho, working under Professor Barbara Messerle, at the 23rd International Conference on Organometallic Chemistry (ICOMC2008), Rennes, France for her poster entitled "Highly Efficient Dual Metal (Rh/Ir) Catalysed Intramolecular Dihydroalkoxylation of

Alkyne diols to form Spiroketal". Last but not least was the poster entitled "Device Tailored Specificity of Titania Nanoparticles" of Nam Trung Tuong, supervised by Dr. John Stride, presented at the 17th International Conference on Photochemical Conversion and Storage of Solar Energy (IPS17) held here in Sydney at the end of July. Congratulations to all prize winners for their outstanding achievements, you are an inspiration to us all. The two winning posters are currently on display within the stairwell of the Dalton Building.

In addition Brad Man and Joanne Ho, both supervised by Professor Messerle, and Callie Fairman supervised by Professor Justin Gooding were awarded UNSW traveling fellowships to attend international conferences. Callie is off to the International Society of Electrochemistry conference in Seville Spain in early September while in July Brad and Joanne headed to Renne in France for ICOMC (see below)

- John Stride (Post-graduate coordinator)

## Research students coming and going

The School of Chemistry has already seen a large number of research students complete their studies with us in 2008. Students that have completed their PhDs include, Michael Page and Serin Dabb from the Messerle group, Alex Goh, Chao-Wei (Wade) Leu, Wai Ching Cheah, Mandar Deodhar and Nick Proschogo from the Kumar/Black group, Ahmad Mokhtari-Fard under Steve Colbrans supervision, Rongmei Liu under Grainne Moran's guidance and Paul Eggers supervised by Justin Gooding. We congratulate all our new doctors on their outstanding achievement. Three honours students also graduated in midyear. We wish Peter Gray and Michael Pratt who were supervised by Steve Colbran and Camille Rosella supervised by Jason Harper, every success in the next stage of their career. Despite all the graduates our research student numbers are still on the rise. Along with the 14 new students that commenced at the beginning of 2008 a further 5 new post-graduate students have joined research teams in the School. The new students are Murat Bingul, Hakan Kandemir & Ibrahim Sengul



Anna Leclere.

who are all from Turkey and have all joined the Kumar/Black group, and Gene Hart-Smith & Till Gruendling who are being guided by Mike Guilhaus and Brynn Hibbert. There has also been two midyear honours students commence with us, Erika Davies working with Jason Harper and Sarah Bernard supervised by Graham Ball.

We have also had two very popular International Practicum students grace our labs recently. Anna-Laure Leclere comes from Toulouse, France and is visiting the lab of Roger Read learning some fluorour chemistry. Anna unfortunately leaves us on September the 15<sup>th</sup>. Germarie Sanchez-Pomales a Ph.D. student from Puerto-Rico visited the Gooding group for a month. The visit was made possible by Germarie winning International Research Fellowship supported by the National Science Foundation of the US. Germarie made a very positive impression in her time here and we were all very sad to see her go. We hope to see both Anna and Germarie again in the future.

## New Post-Docs in the School

Three new post-docs have joined the Gooding group since the last newsletter. The first is Dr. Yit-Lung Khung who comes to us after completing a Ph.D. at Flinders University in South Australia under the supervision of A/Professor Nico Voeckler. Khung will be working on surface-cell interactions and modified porous silicon. The other two post-docs are old friends who

have returned. Guozhen Liu (PhD 2005) has returned after spending several years at CSIRO in Melbourne and will be working on a label free immunosensor. Paul Eggers (PhD 2008) has returned after spending several months in Japan on a JSPS fellowship. Paul will be working on long range electron transfer through surface bound norbornylogous bridges.

## Where are they now – Freya Mearns

Freya completed a Forensic and Analytical Chemistry undergraduate degree at Flinders University, with an Honours year studying surface science, before moving to Sydney to tackle a PhD in the Gooding research group at UNSW. Her PhD was spent studying DNA hybridisation biosensing, mostly using electrochemistry, but also atomic force microscopy. Once she had graduated with her PhD in 2006, she moved to the UK to begin a career in publishing. After three months working in a pub in London, Freya secured a job at the Royal Society of Chemistry in Cambridge. She works as an Assistant Editor for their chemistry journals – initially *Dalton Transactions* and *CrystEngComm*, then *Lab on a Chip* and the *Journal of Environmental Monitoring*, and now *The Analyst*, *JAAS*, and *Metallomics*. A large part of her job is making decisions on

manuscripts submitted to the journals, with the help of scientists worldwide through the peer review process. In addition to dealing with articles from submission to acceptance/rejection, she attends conferences, commissions review articles, and helps keep the journal web pages up to date. Freya is also a core writer with the chemical supplements (Chemical Science, Chemical Technology and Chemical Biology), which are news magazines inserted into the front of the RSC's journals and published online. Occasionally her news stories are published in *Chemistry World*, too – the society's membership magazine distributed to its 40,000 members each month. Freya still keeps in touch with a lot of her friends from UNSW and loves having them visit her in Cambridge.



Freya punting in Cambridge on the river Cam with Elicia Wong, another ex-Gooding group member (visiting from Oxford).

## Our Publications from May to August

### From Molecular Devices cluster

- [1] Ciampi S, Bocking T, Kilian KA, Harper JB, Gooding JJ, Click chemistry in mesoporous materials: Functionalization of porous silicon rugate filters, *Langmuir*, **24**, 5888-5892 (2008).
- [2] Ciampi S, Le Saux G, Harper JB, Gooding JJ, Optimization of click chemistry of ferrocene derivatives on acetylene-functionalized silicon(100) surfaces, *Electroanalysis*, **20**, 1513-1519 (2008).
- [3] Ebrahimi D, Chow E, Gooding JJ, Hibbert DB, Multi-analyte sensing: a chemometrics approach to understanding the merits of electrode arrays versus single electrodes, *Analyst*, **133**, 1090-1096 (2008).
- [4] Ebrahimi D, Hibbert DB, Identification of sources of diesel oil spills using parallel factor analysis: A bridge between American society for testing and materials and Nordtest methods, *J. Chromatogr. A*, **1198**, 181-187 (2008).
- [5] Ebrahimi D, Sharifi MS, Hazell SL, Hibbert DB, Generalized multiplicative analysis of variance of kill kinetics data of antibacterial agents, *Chemometrics Intellig. Lab. Systems*, **92**, 101-109 (2008).
- [6] Fairman C, Yu SSC, Liu GZ, Downard AJ, Hibbert DB, Gooding JJ, Exploration of variables in the fabrication of pyrolysed photoresist, *J. Solid State Electrochem.*, **12**, 1357-1365 (2008).
- [7] Gooding J, Yang WR, The self-assembled monolayer modification of electrodes - Some recent advances in biological application, *Actualite Chim.*, 85-89 (2008).
- [8] Han H, Paddon-Row MN, Howe RF, Charge separation in mesoporous aluminosilicates, *Res. Chem. Intermed.*, **34**, 551-564 (2008).
- [9] Haywood PF, Hill MR, Roberts NK, Craig DC, Russell JJ, Lamb RN, Synthesis and isomerisation reactions of tetranuclear and octanuclear (carbamato)zinc complexes, *Euro. J. Inorg. Chem.*, 2024-2032 (2008).
- [10] Hutchison JA, Bell TDM, Ganguly T, Ghiggino KP, Langford SJ, Lokan NR, Paddon-Row MN, Photoinduced electron transfer dynamics in porphyrin donor dyads, *J. Photochem. Photobiol. A*, **197**, 220-225 (2008).
- [11] Yang WRR, Jones MW, Li XL, Eggers PK, Tao NJ, Gooding JJ, Paddon-Row MN, Single molecule conductance through rigid norbornylogous bridges with zero average curvature, *J. Phys. Chem. C*, **112**, 9072-9080 (2008).
- [12] Yau HM, Barnes SA, Hook JM, Youngs TGA, Croft AK, Harper JB, The importance of solvent reorganisation in the effect of an ionic liquid on a unimolecular substitution process, *Chem. Comm.*, 3576-3578 (2008).
- [13] Mole RA, Cottrell SP, Stride JA, Wood PT, Muon Spin Relaxation study of Manganese Hydroxy Squarate, *Inorg. Chim. Acta*, **361**, 3718-3722 (2008).
- [14] Veling N, Thomassen PJ, Thordarson P, Elemans JAAW, Nolte RJM, Rowan AE, Construction of supramolecular multi-component assemblies by allosteric interactions, *Tetrahedron*, **64**, 8535-8542 (2008).

### From Bioactive Molecules cluster

- [15] Alamgir M, Mitchell PSR, Bowyer PK, Kumar N, Black DS, Synthesis of 4,7-indoloquinones from indole-7-carbaldehydes by Dakin oxidation, *Tetrahedron*, **64**, 7136-7142 (2008).
- [16] Ashmore J, Bishop R, Craig DC, Scudder ML, Synthesis and inclusion properties of new nitrated C-2(-) symmetric diquinoline hosts, *Crystengcomm*, **10**, 839-845 (2008).
- [17] Ashmore J, Bishop R, Craig DC, Scudder ML, 5b alpha,6,7,13b alpha,14,15-hexahydroacridino[4,3-c]acridine, *Acta Crystallograph. E*, **64**, O1136-U2681 (2008).
- [18] Chan IYH, Bishop R, Craig DC, Scudder ML, Yue WM, 8-Methyl-5-methylene-2-oxotricyclo[5.3.1.1(3,9)]dodecan-endo-8-ol, *Acta Crystallograph. E*, **64**, O841-U1732 (2008).
- [19] Cheah WC, Black DS, Goh WK, Kumar N, Synthesis of anti-bacterial peptidomimetics derived from N-acylisatins, *Tetrahedron Lett.*, **49**, 2965-2968 (2008).
- [20] Dean PAW, Craig DC, Scudder ML, Dance IG, The crystallisation and packing of [Cr(C2O4Ag(PPh3)(2))(3)](Ph3P/Ph3PO)(MeNO2)(4), *Crystengcomm*, **10**, 1044-1046 (2008).
- [21] Djaidi D, Bishop R, Craig DC, Scudder ML, 5,7,9,10-tetrahydro-5 beta, 10 beta-methano-3a alpha,8a alpha-methylpropenocycloocta-[1,2-c : 5,6-c']dipyrazole-3,8(2H,4H)-dione monohydrate, *Acta Crystallograph. E*, **64**, O1055-U1979 (2008).
- [22] Garner J, Inglis SR, Hook J, Separovic F, Harding MM, A solid-state NMR study of the interaction of fish antifreeze proteins with phospholipid membranes, *Euro. Biophys. J.*, **37**, 1031-1038 (2008).
- [23] Khazaly A, He Z, Stewart B, Edwards G, Wakelin L, Bisintercalating threading agents as cytotoxic inhibitors of transcription, *EJC Supp.*, **6**, 83-84 (2008).
- [24] Lohachoompol V, Mulholland M, Szrednicki G, Craske J, Determination of anthocyanins in various cultivars of highbush and rabbiteye blueberries, *Food Chem.*, **111**, 249-254 (2008).
- [25] Pala-Paul J, Usano-Aleman J, Soria AC, Perez-Alonso MJ, Brophy JJ, Essential oil composition of *Eryngium campestre* L. growing in different soil types. A preliminary study, *Natural Prod. Comm.*, **3**, 1121-1126 (2008).
- [26] Zhu H, Kumar A, Ozkan J, Bandara R, Ding A, Perera I, Steinberg P, Kumar N, Lao W, Griesser SS, Britcher L, Griesser HJ, Willcox MDP, Fimbrolide-coated antimicrobial lenses: Their in vitro and in vivo effects, *Optom. Vision Sci.*, **85**, 292-300 (2008).
- [27] Black DStC, Kumar N, Wahyuningsih TD, Synthesis of new indole benzylic alcohols as potential precursors of calixindoles. *ARKIVOC*, **6**, 42-51 (2008).



## Our Publications from May to August continued

### From Chemical and Biological Catalyst cluster

- [28] Allen OR, Dalgarno SJ, Field LD, Jensen P, Tumbull AJ, Willis AC, Addition of CO<sub>2</sub> to alkyl iron complexes, Fe(PP)(2)Me-2, *Organometallics*, **27**, 2092-2098 (2008). [29] Allen OR, Dalgarno SJ, Field LD, Reductive disproportionation of carbon dioxide at an iron(II) center, *Organometallics*, **27**, 3328-3330 (2008).
- [30] Bruce MI, Cole ML, Fung RSC, Forsyth CM, Hilder M, Junk PC, Konstas K, The reactivity of N-heterocyclic carbenes and their precursors with [Ru-3(CO)(12)], *Dalton Trans.* 4118-4128 (2008).
- [31] Ebrahimi D, Kennedy DF, Messerle BA, Hibbert DB, High throughput screening arrays of rhodium and iridium complexes as catalysts for intramolecular hydroamination using parallel factor analysis, *Analyst*, **133**, 817-822 (2008).
- [32] Moberg V, Mottalib MA, Sauer D, Poplavskaya Y, Craig DC, Colbran SB, Deeming AJ, Nordlander E, Chiral and achiral phosphine derivatives of alkylidyne tricobalt carbonyl clusters as catalyst precursors for (asymmetric) inter- and intramolecular Pauson-Khand reactions, *Dalton Trans.*, 2442-2453 (2008).
- [33] Su XC, Man B, Beeren S, Liang H, Simonsen S, Schmitz C, Huber T, Messerle BA, Otting G, A dipicolinic acid tag for rigid lanthanide tagging of proteins and paramagnetic NMR spectroscopy, *J. Am. Chem. Soc.*, **130**, 10486-10487 (2008).
- [34] Bruce MI, Cole ML, Parker CR, Skelton BW, White AH, Synthesis and some reactions of the heterometallic C-7 complex {Cp\*(dppe)Ru}C<sub>3</sub>CC<sub>3</sub>CC<sub>3</sub>{Co-3(μ-dppm)(CO)(7)}, *Organometallics* **27** 3352-3367 (2008).
- [35] Elliott P, Brugger J, Pring A, Cole ML, Willis AC, Kolitsch U, Birchite, a new mineral from Broken Hill, New South Wales, Australia: Description and structure refinement, *Am. Mineralogist* **93** 910-917 (2008).

### Other Publications

- [36] McGregor BA, Postle R, Mechanical properties of cashmere single jersey knitted fabrics blended with high and low crimp superfine merino wool, *Textile Res. J.*, **78**, 399-411 (2008).

### Paper successes

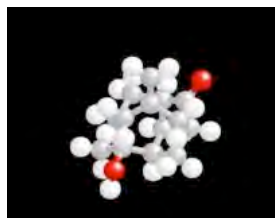
A number of papers written by students and their supervisors at from the School of Chemistry since the last newsletter warrant a special mention.

The publishers of *Acta Crystallographica Section E* select one crystal structure each month to appear as their Cover Illustration. Their molecule of the month for May 2008 was a tricyclic ketoalcohol recently made by Isa Chan. The interest in Isa's paper relates to the high degree of enantiomer separation observed in the solid state after crystallisation of the racemic ketoalcohol. Isa is supervised by Professor Roger Bishop. See the cover image opposite and read the paper at Chan IYH, Bishop R, Craig DC, Scudder ML, Yue WM, 8-Methyl-5-methylene-2-oxotricyclo[5.3.1.1(3,9)]dodecan-endo-8-ol, *Acta Crystallograph. E*, **64**, O841-U1732 (2008). See opposite for the cover image

Two other papers of interest, because of the quality of journal they are published in, are firstly Yau HM, Barnes SA, Hook JM, Youngs TGA, Croft AK, Harper JB, The

importance of solvent reorganisation in the effect of an ionic liquid on a unimolecular substitution process, *Chem. Comm.*, 3576-3578 (2008). The lead author is Ph.D. student Hon Man Yau who was supervised by Dr. Jason Harper. This paper is particularly significant as the data in this paper comes from Hon Man's honours year. The work also arises from a collaboration between UNSW and a team at the University of Bangor led by Dr. Anna Croft. The second paper is Su XC, Man B, Beeren S, Liang H, Simonsen S, Schmitz C, Huber T, Messerle BA, Otting G, A dipicolinic acid tag for rigid lanthanide tagging of proteins and paramagnetic NMR spectroscopy, *J. Am. Chem. Soc.*, **130**, 10486-10487 (2008) which includes results from the 1<sup>st</sup> year of Brad Man's Ph.D. being completed under the supervision of Professor Barbara Messerle.

Our congratulations go out to Isa, Hon Man and Brad and all the authors of papers listed in this edition of the "News from F10NA"



The cover image of Isa Chan's paper

## *Beyond our Walls*

Chemists from UNSW have traveled far and wide since the last newsletter. A PhD student in the Gooding group, Simone Ciampi visited the ISIS Neutron and Muon source in Oxfordshire UK in late July to conduct experiments on the electrochemistry of thin organic films on silicon surfaces in collaboration with Professor Roland De Marco from Curtin University. PhD students, Joanne Ho and Bradley Man, along with her supervisor Professor Barbara Messerle attended the 23<sup>rd</sup> international Conference on Organometallic Chemistry (ICOMC2008) and met with collaborators from Scotland and France. Professor Roger Bishop attended the 19th IUPAC Conference on Physical Organic Chemistry (ICPOC-19), Santiago de Compostela, Spain, 13-18<sup>th</sup> July where he presented two papers. He also managed a visit to Aberdeen in Scotland where he tried to wet his whistle in the Ionic Bar (see photo). He informed the editor of this newsletter that “My senses were assailed by a violent swirl of strong opposing forces as I crossed the threshold of the tavern” but provided no indication as to whether he found this to be a positive or negative experience. Dr. Jason Harper also attended ICPOC-19 as part of a trip through Spain and the UK. In the UK he was very busy presenting lectures at Universities in Manchester, Birmingham, Warwick, Wales and Bangor. During that time he also spent one week at the University of Wales, Bangor, to continue an ongoing collaboration with Dr Anna Croft. Dr Croft subsequently visited UNSW in August as the recipient of a Royal Society Conference Fellowship, which she is also using to attend

## *Distinguished visitor – Professor Chi-Huey Wong*

On August the 6<sup>th</sup> and 7<sup>th</sup> the chemistry Schools of UNSW and USyd were honoured to hear seminars from Professor Chi-Huey Wong of the Scripps Research Institute and Academia Sinica. The two lectures delivered by Professor Wong entitled “Post-translational Glycosylation: Challenges and Opportunities” and “Carbohydrate-based Drug Discovery” were the 2008 Howard Memorial Lectures. The Howard lectures are funded by a bequest left to the two universities in 1993 by the late Harold Theodore Howard who had a strong connection to both universities. The list of

the International Symposium on Organic Free Radicals and the World Association of Theoretically Oriented Chemists.

Professor Justin Gooding visited Kuala Lumpur Malaysia to give the opening plenary at the 1st Regional Conference in Biosensors and Biodiagnostics. He also gave a full day workshop on Biosensors at Universitii Kenangaan Malaysia and a seminar at the same University. Naresh Kumar also visited Malaysia to give an invited lecture entitled “Bio-inspired Synthesis of Bioactive Molecules” at University of Malaya, Kuala Lumpur, Malaysia 16 July 2008.

Dr. Palli Thordarson traveled to the UK to attend the Recent Appointees in Materials Chemistry (RAMC) Networking Conference in Bath in early July. On the same trip he gave seminars at Oxford University and the University of Iceland in Reykjavik.

## *Chem Draw Site License*

Following negotiations started by the School of Chemistry, UNSW has finalised a software site license agreement with CambridgeSoft Corporation of Cambridge, Massachusetts. Jointly funded by the School of Chemistry and UNSW ITS, the site license includes the ChemOffice Pro suite for Windows and ChemDraw Pro for OS X. All UNSW staff and students, including undergraduates, are able to download and use these great tools for drawing structures and simulating NMR spectra both on campus and home computers.

Howard lecturers is a who’s who of organic chemistry over the last two decades, with Professor Wong certainly enhancing the list of recipients. Professor Wong stunned researchers from both Schools with science of incredible breadth and impact. We were all very fortunate to have the rare privilege of Professor Wong taking an entire day out of his busy schedule to meet with members of the School at UNSW and discuss chemistry. His visit finished with a relaxed dinner at Balzacs in Randwick.



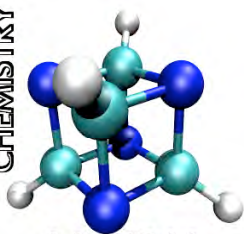
*The Ionic Bar, Aberdeen  
Scotland*



*Jason Harper, Anna Croft  
and colleagues somewhere  
near the lab in Wales*



*Professor Chi-Huey  
Wong*



UNSW

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*An outreach visitor and Wai  
Ching Cheah*



*Palli and Fleur on the  
happy day*

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### *Outreach, Reaching Country NSW*

The School of Chemistry has been very active in hosting Year 10 science students from schools both near and far, with Wellington High School (40 km from Dubbo!), visiting on 20th June. We also welcomed Matraville Sports High on their initial visit on 1st July, and Pymble Ladies College, a regular visitor for several sessions now, on 24th July 2008.

The students spent a half day at the First Year Chemistry laboratories and Analytical Centre, where they performed a variety of interesting experiments such as fatty acid analysis of an oil sample by GC/MS, preparation of biodiesel and the NMR analysis of an unknown white powder.

Furthermore, the School also provided a work experience placement for a Year 10

student, James Bahn from the Newton High School of Performing Arts, from 30th June - 4th July. James spent a week working with the Kumar and Messerle groups learning about the chemistry laboratory and performing hands-on research work under the guidance of a research student and postdoctoral researcher.

The quality of our teaching attracted a special request from Sydney Girls High School to provide coaching to Chemistry Olympiad student Mingyue Kardashinsky. Mingyue who represented Australia at the 40th International Chemistry Olympiad in Hungary this year won a Silver Medal. Congratulations Mingyue!

- Naresh Kumar

### *Wedding Fever*

Last autumn was a busy time for weddings in the Thordarson group starting with the group leader, Palli (Dr. Pall Thordarson) leading off on March 29th when he and Ms. Fleur Young were married. The ceremony and reception took place at Peppers Manor in the Southern Highlands in the presence of friends and family members from across Australia and Iceland. Three weeks later on April 19th, Joshua Peterson, PhD student in the Thordarson group, followed when he and Ms. Alison McManus were married at St. Brigid's Catholic Church in Coogee. Their ceremony was followed by a reception at the Clovelly Lawn Bowling Club with a large number of guest, including friends and family of the groom from the USA. We wish both the newly weds all the best and hope that the wedding fever will continue around the School!



*Josh and Alison*

### *Molecular Devices Symposium*

With the School of Chemistry having three main research themes, one of these themes, Molecular Devices, held a half-day symposium offsite at the College of Fine Arts to facilitate the sharing of ideas between the respective research groups. The symposium was organized by post-docs Sabine Dehn and Yit-Lung Khung with all talks being given by bench researchers. All presentations were excellent and lots of discussion ensued. The next of these symposia is planned for late 2008. The opening presentation was given by Germaire Sanchez-Pomales a visiting student from Puerto-Rico.