UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

## Department of Chemistry

# Chemistry Newsletter

Number 347 Friday, 27 February 2009

We seem to have made it through the first week of the teaching year relatively unscathed. The enrolment numbers are up in Chemistry and ***Kevin Barnes*** (the College of Science Manager) tells me that this is true across the College. Of course, under the new government funding system we don't get funded at a higher level, but it's nice to have fuller classes.

Last week's newsletter finally got out to the 200- and 300-level students after a couple of hiccoughs. This one should go more directly, so I'll explain to the new readers what it's all about. The newsletter is my way of attempting to inform the department about many of the goings on in the departmental, the college and the wider university. It goes to all students in chemistry and biochemistry from 200-level up, to all staff and visitors, and to many alumni, retired staff and past visitors. It provides a means of introducing new visitors, staff and postgraduate students, and informing readers about seminars, scholarships, coming deadlines etc. It contains information about recent publications and peoples' successes in academia and life; and ***Meg Upjohn*** contributes a regular column about new services and publications available in the library. Finally there is *Degenerate States* to put a smile on your face. If you have any information that you think will be of wider interest, you should feel free to submit it for inclusion – this applies to everyone from 200-level students to Emeritus Professors.

Which brings me to another point. This issue is the first compiled by ***Sara Syme***, the new person in the department's administration office. For those of you who haven't yet met Sara, she has written a short hello message that you will find further down. You might also note that the contact details at the end of the issue now direct you to Sara rather than to Rachael. Finally, note that if you don't get the information to Sara by midday on a Thursday, it probably won't be included until a week later.

Bryce

## University administration news

**Smoke-free Policy**

The University of Canterbury went smoke-free on 1/1/09. This policy was developed in response to rapidly changing societal attitudes towards tobacco smoking. Smoking is not permitted anywhere in the University grounds except the following designated smoking areas:

- The amphitheatre in front of the UCSA Foundry
- The science quadrangle
- The eastern part of the landscaped area in front of the School of Law building towards the School of Fine Arts
- The enclosed court to the northeast of the Engineering Library
- Outside the Physical Sciences Library
- The garden at the rear of the Staff Club
- Under the shade cloth on the eastern side of the Central Library steps

The policy, which extends to all University facilities - including regional campuses, field stations and other UC premises - is the first step towards the University being totally smoke-free in the future. The

University is committed to providing individual support for staff and students who wish to become smoke-free. Anyone who wishes to quit smoking should contact the Health Centre on ext 6402 to arrange a free consultation.

# Department administration news

**Phone Number Change**
***Rachael*** will now be on extension 6413 and ***Sara*** has taken over the 6100 extension.

# Congratulations

**Research Award**
Congratulations to ***Sally Gaw*** and her group, who have been awarded $10,000 from the Brian Mason Scientific and Technical Trust. The funds will be used for the first stage of a larger research programme investigating the effect of environmental stressors on cyanotoxin production.

**Introducing Siena Mae Telfer**

*The adventure has begun.* Things all happened fairly suddenly over Waitangi weekend, a couple of weeks earlier than expected. Maiko went into labour in the evening and Siena was born around 2am on Saturday Feb 7. They're both home now and doing well. She's a wee midget, weighing in at just under 2.5 kg (5lb 7). Full head of hair but rather bandy legs (blame me). We're equal parts thrilled, exhausted and daunted, but loving each and every day with her. ***Shane*** and ***Maiko*** [Shane Telfer was a PhD student with ***Richard Hartshorn***. He is now a lecturer at Massey University]

**Cameron Thomas Urban Tinker**

Born: 6th February 2009 to ***Sylvia Urban*** and Rick Tinker. [Sylvia was a PostDoc here with Murray Munro and John Blunt a few years ago.] Rick was hoping for an Australia Day baby as I [Sylvia] was born on America's Independence Day (4th July) and my mum on Bastille Day (14th July). Well, he was nine days overdue and hence was born a big healthy boy. He was born on Waitangi Day which is very appropriate since Rick and I lived in New Zealand for three or four years.

# People

**One Murray Retires**
Over this coming weekend, Professor ***Murray McEwan*** will retire from his position as Professor of Chemistry. He will instantaneously take on a new persona as Emeritus Professor of Chemistry and will continue to have presence in the department, not the least because he still has research students completing the requirements for their degrees. Since his appointment in 1967, Murray has had an active and prosperous career as a physical chemist at Canterbury. He is an excellent teacher of both undergraduate and postgraduates, with a sincere concern for student learning and well-being. His world-class research in atmospheric and ion-molecule chemistry led to developments in SIFT-NS technology and, eventually, to the spin-off company Syft, which is now prospering in Christchurch. His standing as a researcher is reflected in his Fellowships of the New Zealand Institute of Chemistry and the Royal Society of New Zealand. He presented the Morrison Lecture (now Medal) of the Australian and New Zealand Mass Spectrometry Association in 2005 and was awarded the Pickering Medal of the Royal Society of New Zealand in 2006. He tells me that he doesn't expect to slow down after "retirement" -- he expects to be as busy as ever with Syft and has plenty of papers to be written. In the next few weeks we will organize a function to celebrate his career in the department.

**Introducing Sara Syme**

Bryce has asked me to write a brief "blurb" on myself so here goes ... I live in Rangiora with my three children (William 14, Charlotte 11, and Daniel 9), husband (Logan) and a menagerie of pets. We have a 100-year-old villa which we are renovating (slowly!) with a very large garden, which I absolutely love. I have lots of interests, some of which include interior design, photography (very amateur!), yoga and general fitness … and holidaying in our Kombi van. Before joining the University, I spent the last five years working at Rangiora High School in the main office. I am very happy to be here and look forward to getting to know you all! ***Sara***

**Academic Visitors**

The department is currently hosting two academic visitors from the School of Pharmacy of UKM, Kuala Lumpur. They are Dr ***Jacinta Santhanam*** and Associate Prof ***Jalifah Latif***. They are supervisors of ***Carolina Santiago***, a visiting student (see last issue of the newsletter) and will be working with the Marine Group for two weeks or so. They are housed in Room 756.

**Return of the Emeritus Professor**

Professor ***Ward Robinson***, who retired from the this department a couple of years ago, but who remains Emeritus Professor of the University, will be working in the X-ray lab during the next six weeks while on leave from his on-going position as Visiting Professor of Chemistry at the University of Malaya in Kuala Lumpur. He aims to remind himself of the techniques and tricks used in the lab he developed during his career here, so that he will go on appearing competent and employable to his colleagues and students in Asia. Cash might flow to Canterbury in the course of these transactions.

**Comings and Goings**

Wayne Mackay will be away from today until 16 March.

# Seminars

**Chemistry Department Seminar** (**3.00 pm**, Friday 27 February, Room 531) *****NOTE TIME CHANGE*****
***Aharon Gedanken,*** Kanbar Laboratory for Nanomaterials at the Bar-Ilan University Center for Advanced Materials and Nanotechnology, Bar-Ilan University, Ramat-Gan, Israel.

*Novel Methods (Sonochemistry, Microwave dielectric heating, Sonoelectrochemistry, and RAPET) for the fabrication of nanomaterials*

In my lecture I'll present the four methods employed in my laboratory for the fabrication of nanoparticles and the application of these nanomaterials. In each of these techniques, I'll emphasize the parameters that determine the control over size and morphology of the nanoproducts. I'll also mention the advantages or superiority of the method over the other techniques used for the synthesis of nanoparticles. Sonochemistry is a technique in which ultrasonic waves are passed through a solution and the nanomaterials either precipitate or form a colloidal solution at the end of the sonication. After preparing about 100 nanostructures by this technique I consider its four main advantages over other techniques as:

1) Preparation of amorphous products. Under certain condition amorphous products are formed. There is no need to add glass formers and as a bonus the amorphous products are obtained in nanometre size.
2) Deposition of nanoparticles on ceramic, textile, metallic, glass, and polymeric surfaces. A smooth homogeneous coating layer is formed on the surface. The nanoparticles are anchored to the surface by forming chemical bonds or chemical interactions with the substrate and cannot be removed by washing.
3) Insertion of nanomaterials into mesoporous materials, and
4) The formation of proteinaceous micro and nanospheres.

Microwave (MW) dielectric radiation is used mostly for the preparation of nanometals, nanometal oxides, and nanoparticles of metal chalcogenides (S2-, Se2-, and Te2-). In the latter case a polyol reaction is carried out using cheap precursors, and a short reaction time. Coating nanoparticles on ceramic bodies is not suggested for MW radiation, on the other hand it is highly recommended for carbon bodies. The main

parameters that determine the particle size in sonoelectrochemistry are temperature, sonication intensity, and the electric pulse width. Finally RAPET is being used in our laboratory for the last two years. We will show that the RAPET of silanes is yielding the smallest reported SiC particles having the highest surface area. Three classes of products were obtained when alkoxides, M(OR)x, underwent the RAPET. In the first, carbon is the core and the M is the shell. In the second the MO is the core and the carbon the shell. The third category is of no distinct border between the Carbon and the MO (alloy-like product).

**Chemistry Department Seminar** (11.00 am, Thursday 5 March, Room 531)
Prof ***Andrew G. Sykes***, Department of Chemistry, University of South Dakota
What is Anthraquinone Good for Anyways?
Our research group uses an anthraquinone scaffold to conduct a variety of different chemical investigations including: ion selective luminescence, large amplitude molecular switches, and coordination chemistry/supramolecular chemistry. Synthesis of an anthraquinone-polyether macrocycle that incorporates an intraannular carbonyl group, allows for selective detection of Cd(II), Hg(II) or Pb(II), depending on the substituents incorporated within the polyether ring. Reduction of the anthraquinone macrocycle and reaction with nitriles and primary amides under Ritter amide conditions yields protonated amides (oxonium ions) stabilized by an intramolecular hydrogen bond. Short, Low-Barrier Hydrogen Bonds (LBHB) are formed, averaging ~2.5 Å in length. Crystallography and NMR spectroscopy characterize "open" and "closed" states of deprotonated and protonated adducts that comprise a large amplitude molecular switch. Applications of these new molecular switches in the areas of nanotubes and membranes will also be discussed. In addition, condensation of nicotinic and isonicotinic acids with anthraquinone produce bidentate ligands that exhibit a number of different chelating and bridging modes of binding with transition metals. All of these projects have been initiated or extended through much fruitful collaboration with faculty and students here at the University of Canterbury.

**Learning Skills Centre: Lectures, Seminars and Workshops for Postgraduate Students**
The Learning Skills Centre is offering a range of generic advice lectures, a series of skills workshops and a new doctoral seminar series this semester. All lectures and workshops will be in Seminar Room at South Bank, UCSA. Enrolling is essential. To do so go to: www.learningskills.canterbury.ac.nz For general queries about these sessions, email learningskills@canterbury.ac.nz or stephanie.day@canterbury.ac.nz

***Lectures for Thesis Writers*** Generic topics of interest to thesis writers

| | | |
|---|---|---|
| Writing a Thesis Proposal for Arts and Humanities | Mon, March 2 | 10.00 – 11.00 am |
| Writing a Thesis Proposal for Science and Engineering | Tues, March 3 | 10.00 – 11.00 am |
| Writing a Literature Review | Mon, March 9 | 10.00 – 11.00 am |
| Writing a Literature Review | Tues, March 10 | 10.00 – 11.00 am |
| Managing Your Supervisor | Mon, March 16 | 10.00 – 11.00 am |
| Managing Your Supervisor | Tues, March 17 | 10.00 – 11.00 am |
| Time Management for Postgrads | Mon, March 23 | 10.00 – 11.00 am |
| Time Management for Postgrads | Tues, March 24 | 10.00 – 11.00 am |
| Giving an Oral Presentation for Arts and Humanities | Mon, March 30 | 10.00 – 11.00 am |
| Giving an Oral Presentation for Science and Engineering | Tues, March 31 | 10.00 – 11.00 am |

***Lectures for Honours Students*** These lectures are on generic topics of interest to Honours students. All will be in Seminar Room at South Bank (both rooms).

| | | |
|---|---|---|
| Giving a Short Oral Presentation | Fri, March 13 | 10.00 – 11.00 am |
| Writing an Annotated Bibliography or a Literature Review | Fri, March 20 | 10.00 – 11.00 am |
| Writing an Annotated Bibliography or a Literature Review | Thur, March 26 | 10.00 – 11.00 am |

***Workshops*** These are two hours with tea break in the middle. Student participation is expected. These workshops are open to all postgraduates, including Honours students.

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|---|---|---|---|
| Perfect Punctuation for Postgrads | SD | Wed, March 11 | 10 am – 12 noon |
| Good Grammar for Postgrads | SD | Wed, March 18 | 10 am – 12 noon |
| Polish Your Written Style for Postgrads | SD | Wed, March 25 | 10 am – 12 noon |
| Paraphrasing and Précis for Postgrads | SD | Wed, April 1 | 10 am – 12 noon |

***New! Doctoral Seminar Series***

PhD students and other interested parties are invited to the Doctoral Seminar Series (incorporating UCTL's Aiming for Academic Careers), scheduled for every Friday afternoon during term time. These sessions will consist of academic papers or other presentations by current doctoral candidates, as well as talks on academic careers and postgraduate professional development by UC academics and guests. The inaugural session will be on March 20, 12:30 – 2:30, in the UCTL seminar room, Law 427.

***Dr. Jenny Clement*** from the English Department will be speaking on *Preparing for the American Academic Job Market*. To RSVP for the above, to register your interest in giving a future paper, or to volunteer* to be on the organising committee of the Doctoral Seminar Series, please email creon.upton@canterbury.ac.nz
*Jenny's first tip: academic service, such as committee work, looks very good on your CV.

# Recent publications

*Published in the Australian Journal of Chemistry:* Shazia Zaman, Owen J Curnow and Andrew D Abell, "Development of Aqueous metathesis Catalysts", *Aust. J. Chem.*, 2009, 62 (2), 91-100.

Buback, M., Günzler, F., Russell, G.T. & Vana, P. Determination of the Mode of Termination in Radical Polymerization via Mass Spectrometry. Macromolecules, 2009, 42: 652-662.

# Physical Sciences Library News

***The Library welcomes students to the 2009 academic year.*** If your first year students missed out on a tour of the Physical Sciences Library, they can just ask at the Service Desk and staff will be happy to show them around or answer any questions. We have all the recommended text books and lots of other resources to assist them with revision or extension in each of their subjects.

***New Library Subject Guide for Chemistry:*** Check out the new-look Chemistry Subject Guide. It was set up through LibGuides which allows more flexibility and interactivity than the previous subject guide. Please help us to improve this resource - your feedback and suggestions are encouraged in the comment boxes.

***New due date reminder service:*** The Library is now emailing reminders to borrowers three days before items are due back. These notices are only for items loaned for more than three days. Items can be renewed online via the Library Catalogue's My Account. More information about borrowing and renewals on the Library's Website.

***Recent change to Library catalogue searching:***

- Boolean operators *or* and *not* must now be entered capitalised as *OR* and *NOT*. E.g. **"ozone depletion" OR "global warming"** finds results containing **either** phrase.
- Individual words not linked by an operator will still be treated as *AND*, i.e. both words must be present in the search results. E.g. **atmosphere* hydrocarbon*** gives results containing **both** atmosphere (or atmospheric, etc) **and** hydrocarbon (or hydrocarbons, etc). Examples are provided on the Library Catalogue search screen.

***The SIS has nothing on us - we've got your private and public lives on record*** UC's Macmillan Brown Library and Archives New Zealand's Christchurch Regional Office have teamed up to create an online exhibition... read more.

***New Chemistry Titles in the Library:***

- Ede, Andrew. The chemical element: a historical perspective. QD 466 .E21 2006
- House, J. E. Inorganic chemistry. QD 151.5 .H842 2008
- International Union of Crystallography. International tables for crystallography.
- QD 908 .I61

- Simpson, Jeffrey H. Organic structure determination using 2-D NMR spectroscopy: a problem-based approach. QD 461 .S6135 2008
- Timberlake, William E. Basic chemistry, 2nd ed. QD 31.3 .T583 2008

# Research opportunities

**James Cook Research Fellowships:**
The James Cook Research Fellowships are administered by the Royal Society of New Zealand on behalf of the Government. They are awarded to researchers who are recognised leaders in their respective fields, have the requisite qualifications and experience, and are able to demonstrate that they have achieved national and international recognition in their area of scientific or technological research. Applications are now being sought in each of the following research categories:

a. Biological sciences (including biotechnology)
b. Engineering sciences and technologies
c. Health sciences
d. Physical sciences (including chemical sciences; geosciences, mathematical and information sciences)
e. Social sciences (including research of relevance to peoples of New Zealand and/or the South-west Pacific)

The primary intention for the award of Fellowships is the recognition of sustained excellence in research. The normal term of a Fellowship is two years and the stipend offered for those awarded in this round will be $110,000 incl. GST per year. Reimbursement of relevant expenses to a maximum of $10,000 annually will also be offered. Those appointed will be required to take up their Fellowships by 1 April 2010. Deadline: ***23 June, 2009***

**Royal Society of New Zealand, ISAT Linkages - Bilateral Research Activities Programme (BRAP)**
BRAP is a funding programme designed to support new international science and technology links between New Zealand and the rest of the world. The BRAP objectives are to:
(a) Develop international opportunities and utilise overseas advances in RS&T for economic, social and environmental progress;
(b) Positively influence regional and international RS&T linked activities that advance New Zealand's national interest;
(c) Increase the level of funding, scientific skills and technological capabilities that New Zealand is able to source from other countries;
(d) Promote international recognition of New Zealand as a centre for innovation.
The primary purpose of the programme is to support the development and enhancement of research relationships with other countries with an emphasis on supporting new activities and relationships. Deadline: ***8 April, 2009***

# Scholarships, funds and awards

**2009 Medals and Awards Administered by the Royal Society of New Zealand**
The following medals and awards (of potential interests to chemists) are being offered in 2009 by the Royal Society of New Zealand.
* ***Rutherford Medal*** - for exceptional contributions to New Zealand society and culture through activities in the broad fields of science, mathematics, social science, and technology
* ***Pickering Medal*** - to recognise excellence and innovation in the practical applications of technology
* ***Thomson Medal*** - for outstanding and inspirational leadership in the management of science and outstanding contribution in the development and application of science and/or technology to wealth generation
* ***New Zealand Science and Technology Medals*** - to recognise and honour those who have made exceptional contributions to New Zealand society and culture through activities in the broad fields of science, mathematics, social science, and technology
* ***Hector Medal*** - Chemical sciences

* ***Hamilton Memorial Prize*** - for beginners in scientific or technological research in New Zealand
* ***Hatherton Award*** - for the best scientific paper by a PhD student at any New Zealand University in physical sciences, earth sciences and mathematical and information sciences

The closing date for nominations for all the Medals and Awards listed above is ***30 June 2009***. Electronic copies of the information and application forms are available from awards@royalsociety.org.nz; or on the Society's website http://www.royalsociety.org.nz/Site/funding/MedalsAwards/Default.aspx. Suggestions of possible nominations from the Department or the College of Science should be directed to ***Greg Russell***, Chair of the Departmental Research Committee.

**2009 Rutherford Medal Nominations**

The Royal Society is calling for nominations for the 2009 New Zealand Rutherford Medal. The Rutherford Medal is the highest award instituted by the Royal Society of New Zealand at the request of the Government to recognise and honour those who have made exceptional contributions to New Zealand society and culture through activities in the broad fields of science, mathematics, social science, and technology. The Rutherford Medal recognises a significant contribution to the advancement and promotion of public awareness, knowledge and understanding in addition to eminent research or technological practice by a person or group in any field of science, mathematics, social science, or technology. A group award shall only be made in very meritorious circumstances. When considering the award of a Rutherford Medal, the Royal Society will be looking for people of distinction who will stand in high public esteem. They will have demonstrated more than purely scientific or technological achievement within their scientific or technological discipline. To qualify, the research needs to be recognised internationally as significantly advancing understanding of the field. They will also have made a substantial contribution to the advancement and promotion of public awareness, knowledge and understanding of science, mathematics, social science, or technology, public service within the scientific community, or on behalf of research, science, mathematics, social science, or technology in the wider community. Nominations close ***23 June 2009***.

**2009 Pickering Medal**

The Royal Society is calling for nominations for the 2009 Pickering Medal. The Pickering Medal is awarded annually to a person who, while in New Zealand, has through design, development or invention performed innovative work, the results of which have been significant in their influence and recognition both nationally and internationally, or which have led to significant commercial success. Nominations close ***23 June 2009***

# Degenerate states

***The Irish Diet***

An Irishman was terribly overweight, so his doctor put him on a diet. "I want you to eat regularly for two days, then skip a day, and repeat this procedure for two weeks. The next time I see you, you should have lost at least five pounds." When the Irishman returned, he shocked the doctor by having lost nearly 60 lbs! 'Why, that's amazing!' the doctor said, 'Did you follow my instructions?' The Irishman nodded ... 'I'll tell you though, by jaesuz, I t'aut I were going to drop dead on dat third day.' 'From the hunger, you mean?' asked the doctor. 'No, from all the skippin.'

# Contact details

If you have items of news or interest that you would like included in the Department of Chemistry newsletter, then contact Sara Syme before noon on Thursday at: sara.syme@canterbury.ac.nz or phone 364-2100 / extension 6100.