

2009 DISTILLATIONS

University of Toronto

CHEMISTRY ALUMNI MAGAZINE



**41ST INTERNATIONAL
CHEMISTRY OLYMPIAD**
Canadian Highschool Students Excel at
the International Chemistry Olympiad

**A BANNER YEAR
FOR AWARDS**
Faculty, Staff, Graduate and
Undergraduate Award Recipients

HISTORICAL ENDEAVOURS
Preserving our History with
the Chemistry Archives

Canadian Chemistry Olympiad Team in Cambridge, England

INNOVATION • EDUCATION • EXCELLENCE

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from NSERC's Strategic Network Grants program. "The Network for Bioplasmonic Systems (BiopSys), led by Gilbert Walker of the Department of Chemistry, aims to speed up cancer diagnosis by incorporating an emerging technology known as plasmonics into existing procedures that use cancer markers found on the surfaces of cells. Plasmonics – a technique that produces waves of electrons when light hits a metal surface – offers significant opportunities for increasing the types of cancer markers that can be identified simultaneously." For more information about BiopSys, see page 6.

Bettam, S. (2009) \$10 million announced for U of T-based research networks to speed up cancer detection, improve business intelligence. University of Toronto News. Retrieved September 24, 2009, from <http://www.news.utoronto.ca/lead-stories/10-million-announced-for-u-of-t-based-research-networks-to-speed-up-cancer-d.html>

Aaron Wheeler

Professors Aaron Wheeler, Robert F. Casper, and their groups have developed a new method to analyze breast tissue samples from breast cancer patients using droplet-based digital microfluidics. Their findings have been reported in *Chemical & Engineering News*, *U of T News*, and *The Scientist*.

Arnaud, C. H. (2009, Oct. 12) Microfluidic Assay for Estrogen, *Chemical & Engineering News*, vol. 87, no. 41, pg. 43.

Elias, C. (2009) U of T researchers employ microfluidics to create lab-on-a-chip. University of Toronto News. Retrieved October 8, 2009, from <http://www.news.utoronto.ca/health-and-medicine/u-of-t-researchers-use-microfluidics-to-create-labonachip.html>

Webb, S. (2010) Big ideas, little chips. *The Scientist.com* Retrieved February 9, 2010, from <http://www.the-scientist.com/article/display/57114/>

Faculty Achievements cont.

istry was presented to Professor Andrei Yudin. This award is given to a scientist residing in Canada, not yet 40 years of age, and who has made a distinguished contribution in the fields of Organic Chemistry or Biochemistry while working in Canada.

Deborah Zamble

Professor Deborah Zamble received a 2009 NSERC Discovery Accelerator Supplement. The Discovery Accelerator Supplement provides substantial and timely resources to a small group of outstanding researchers who have a well-established research program, and who show strong potential to become international leaders in their respective area of research. "This funding will have a significant impact on the biological chemistry work we're doing to advance knowledge of how bacteria use heavy metals," Zamble said. "Studying these fundamental systems will help us design new types of antibiotics and develop a greater understanding of diseases like prion disease and genetic conditions such as Wilson's disease."

Take Our Sons and Daughters to Work Day

On April 23rd, Chemistry welcomed 19 children interested in exploring chemistry. Mike Watson (Wheeler group) and Sharonna Greenberg (Stephan group) were demonstrators par excellence! They did a Mentos explosion outdoors, froze objects with liquid nitrogen, made a magical whispering potion and elephant toothpaste. Mike and Sharonna explained some of the chemistry involved in the experiments and ended the demo with teaching the children to make silly putty from borax and white glue.

Later on, we took the children on a tour of two of our labs. Praew Thansandote (Lautens group) and

Rivka Taylor (Batey group) showed them around their labs with the help of their labmates. The kids loved it!

As part of the job shadowing aspect, we organized a "behind the scenes" tour for six children whose parents work in the department. They saw the X-ray Crystallography, NMR and Analest facilities and learned a bit about what goes on there. Afterwards, our guests toured the machine shop where they saw a demo of gold electroplating and each came away with a gold plated penny (worth about two cents!) The children also visited the glassblowing shop and had a



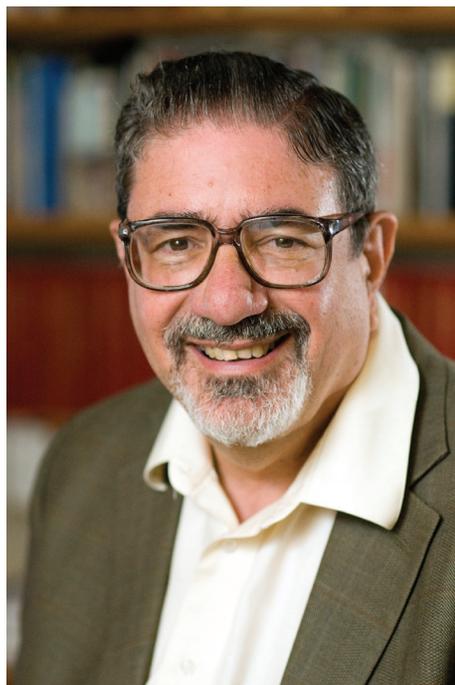
Praew Thansandote leads students on a tour of the Lautens labs.
Photo credit: Patricia Meindl.

cool (hot?) demo where they saw melted glass formed into various shapes. Everyone got to try their hand at blowing a glass bubble!

- Patricia Meindl

A. R. Gordon Distinguished Lecture Series

Gordon Lecture Reflections



Professor Richard Zare
Photo credit: Professor Richard Zare

I thought that it was a great opportunity to meet Professor Zare at a more personal level during lunch. His talks covered a wide range of topics, inspiring me to remember that I should not limit my research. He was very enthusiastic and had a great sense of humour.

- Rachel Chang

Professor Zare was very personable and fun. It was great to see that someone of his scientific stature did not demand the attention of his audience through pomp, but rather through a quirky exuberance and down to earth quality. Lunch was thoroughly enjoyable. He shared his sense of humour with us, challenged us to some problem solving, talked about some of the challenges in his career, and gave us some subtle advice for our own careers. This was not surprising given the quality of his presentations, which were equally accessible and interesting.

- Russ Algar

It was a great privilege to be able to meet personally with a prominent member of the scientific community. It was refreshing to be introduced to a research program with such diverse interests. I found Professor Zare to be highly enthusiastic, passionate, and insightful, and I am happy for the opportunity to have been a part of his visit.

- Rob McWhinney

Professor Richard (“Dick”) Zare from Stanford University was the 2008-2009 Gordon Lecturer. A hallmark of Dick’s career has been scientific diversity, and his Gordon lectures were true to form. On Monday, May 4, in a presentation entitled “Making It Count,” Dick discussed his group’s ground-breaking work using microfluidics to evaluate the stochastic behaviour of single cells and molecules. On Tuesday, May 5, in an elegant treatise on fundamental research entitled “Inelastic Vibrational Energy Transfer,” Dick reviewed his long-standing passion for understanding the subtleties of the seemingly “simple” reactions like $H + H_2$. And on Wednesday, May 6, in “Sustained Release of Drugs Dispersed in Polymer Nanoparticles,” Dick described a recent addition to his research portfolio, the development of supercritical carbon dioxide-based techniques to package organic molecules in forms useful for drug delivery.

Of course, Dick’s work is even broader outside of the context of the Gordon lectures. Depending on which

literature you read, you might find that Dick is a separations scientist, a surface scientist, a mass spectrometer builder, or even a beer bubble-counter (look it up!). To all of these interests, Dick brings a unique brand infectious enthusiasm, and during the course of his visit in Toronto, I was reminded again and again how fun it is to be a scientist, and how fortunate we are to practice this profession.

In addition to his lectures, all the evidence suggests that, remarkably, everyone on Dick’s very busy meeting schedule received his full and complete attention. Just ask the students who joined him for lunch on Wednesday about the long list of science-teasers that he introduced them to in lieu of eating! All in all, Dick Zare’s visit was exciting and inspiring – another successful notch on the wall for the Gordon Lecture Series.

- Aaron Wheeler