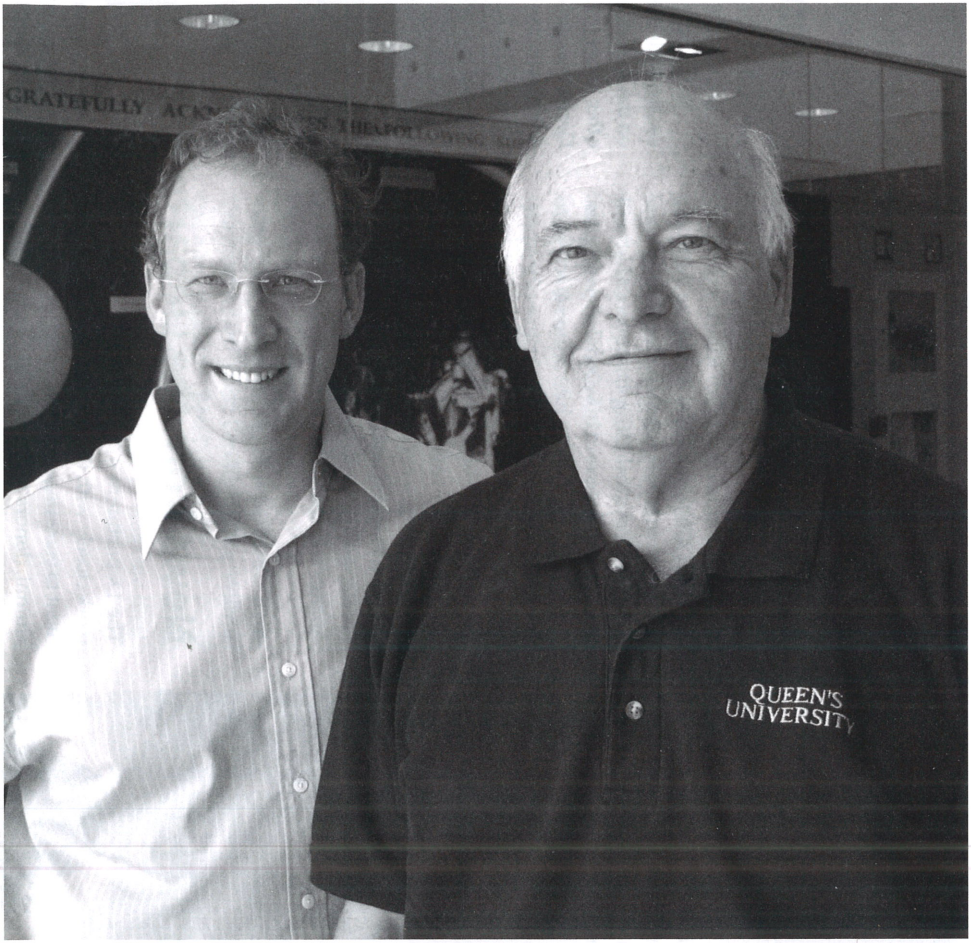
COMPLIMENTARY ISSUE

Q-CHeM CHRONICLES

Queen's UNIVERSITY

AUGUST 2008

Recognizing Teaching Excellence



Bill Newstead (right) is the 2008 recipient of the prestigious *Chancellor A. Charles Baillie Teaching Award,* which recognizes undergraduate or graduate teaching that has had an outstanding influence on the quality of student learning at Queen's. It is awarded annually for activities that lead to improved learning, including curriculum development, educational leadership, design and delivery of out-of-classroom educational experiences, or classroom teaching and supervision. Bill is also one of two recipients of the *2008 First Year Teaching and Learning Award*, which is given by the Faculty of Applied Science. Bill is joined in this picture by Richard Oleschuk, the 2008 recipient of the *Chemistry Graduating Class Award for Teaching Excellence.*

Q-CHeM CHRONICLES

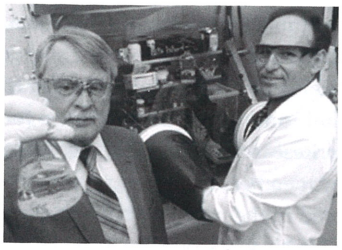
Queen's UNIVERSITY

AUGUST 2008

Taming Toxic Wastes

Queen's Chemistry Researchers Neutralize Chemical Weapons

REPORT BY GEORGIE BINKS, CBC NEWS, POSTED ON THE CBCWEBSITE (WWW.CBC.CA/TECHNOLOGY) MAY 22, 2008



Deleting e-mails and recycling newspapers are most people's biggest concerns when it comes to getting rid of waste. But what if you're a world leader and have a stash of forbidden deadly chemicals on hand? Or what if terrorists suddenly swoop down and let loose with toxic nerve agents? Who you gonna call?

Well, Queen's University researchers Stan Brown (left) and Alexei Neverov (right), specialists in catalytic chemistry, may be just the pair. The two have developed a method for rapidly and safely destroying toxic agents, ranging from chemical weapons to pesticides.

The two didn't start out with a grand plan to rid the world of dangerous poisons, explains Brown. "We were just doing basic research and never envisioned where it would go." What the two have developed is a solution that can neutralize organophosphorus nerve agents with names like Tabun, Soman and VX. They can't reveal the solution's composition, but it has an alcohol base using methanol, ethanol and propanol, metal ions that act as the catalytic entity, as well as other materials to control the solution conditions.

"The materials are non-toxic and off the shelf," says Brown. When the solution comes into contact with the nerve gas or certain pesticides, it neutralizes them so they're no longer toxic. "It's a chemical reaction that transforms them from a lethal form of organophosphate to a non-lethal form," Brown explains. The solution can be sprayed via a handheld or a machine-driven sprayer, sprayed on and sucked up by a vacuum, or dispensed in a huge dishwasher type device that a vehicle like a tank can be driven into.

Right now, Brown's and Neverov's concoction has been tested by an independent European defence organization, and it managed to decompose three of the most lethal chemical weapons in less than 30 seconds. Testing on contaminated surfaces showed almost complete decontamination of the agents in 10 minutes.

Nerve agents an international concern

While nerve agents might not seem at the top of many countries' fears, in fact they are a big concern. Post 9/11, countries are jittery about the next big threat. One chemical-weapon attack in particular is still fresh in many people's memories – the Tokyo subway attack of 1995, in which terrorists used the deadly nerve agent sarin to kill 12 people and make 5,500 others ill.

Nerve agents can kill quickly, and just one milligram per person is a lethal dose. To put that into perspective, a 26-ounce bottle of some nerve agents (740 millilitres or roughly the equivalent of two pop cans) is enough to kill 700,000 people. "The agent penetrates the skin or is breathed in and stops the nerve action, killing a person with respiratory paralysis," Brown says.

Cleaning up

At the moment, these types of chemical weapons are possessed legally by the military in the United States, Russia and some former Soviet Union countries. The Chemical Weapons Convention treaty was formulated in 1992, and all of the approximately 170 signatory nations agreed to get rid of their stockpiles and not make any more. That treaty called for the destruction of stockpiles by all of the signatory nations by 2007, which was extended to 2012. (The United States now says it can't accomplish this until 2021.)

Right now, there are ways to get rid of the material but they use water and caustic agents such as lye or bleach that can damage or destroy the contaminated equipment or facilities. "These methods are less efficient than ours and they cause degradation of the object you're trying to clean," Neverov says. "Because ours is neutral, you can wash the surface and use it right away. For instance, some contaminated electronics can be immersed in the solution, rinsed off and used immediately." This provides a non-toxic green alternative to present decontamination practices.

"The United States has something like 25,000 tonnes of this material, so getting rid of this isn't very easy. With present decontamination methods, after the agents have been decomposed chemically, the waste has to be shipped to a special facility for incineration and a lot of people don't like these trains coming through with this material," says Brown.

Right now, there are plans to commercialize the discovery with the help of PARTEQ Innovations – an organization within Queen's University. The next big step is finding a partner to turn Brown's and Neverov's research findings into a marketable product. Davis Hill, the commercial development manager for PARTEQ, says the non-for profit agency is already being contacted by people who want to clean up sites where pesticides have been dumped. "There are still a lot of dangerous chemical warfare agents out there, but certain pesticides are equally toxic in large quantities," Hill says. "They're actually available more readily than chemical warfare agents are, and we need ways to be prepared for on-purpose attacks or accidental spills of these agents."

Stan Brown's research on neutralizing nerve agents and pesticides has received extensive coverage in the news media, including CBC.ca, UPI.com, sciencedaily.com, medicalnewstoday.com, discoverychannel.ca, and scientistlive.com. Stan Brown and Alexei Neverov will also be featured on the Discovery Channel in the United States this summer, and in Canada this fall. Check your local listings !

2007-2008 DEPARTMENTAL HIGHLIGHTS

June 2007
Bob Lemieux is appointed Head of the Department of Chemistry.

July 2007
The annual Departmental BBQ is held on Friday, July 6th.

Tucker Carrington joins the department as Professor and Canada Research Chair in Computational Chemical Dynamics.

Philip Jessop is promoted to the rank of Professor.

August 2007
Pathogen Detection Systems, a company founded by Prof. Stephen Brown and other Queen's researchers, is featured in the Leadership Through Technology supplement of the *Kingston This Week* newspaper. The company has developed new technology for detection of bacteria in drinking water based on a patented process developed in the Brown laboratory.

David Zechel is the recipient of an Early Researcher Award from the Ontario Ministry of Research and Innovation.

September 2007
Suning Wang is one of two recipients of the 2007 Queen's Prize for Excellence in Research.

Gregory Jerkiewicz and Chris Podlesny participate in the Easter Seals Sailing Regatta.

Jenny Du (Crudden group) is the inaugural recipient of the McAdie Chemistry Doctoral Student Award.

Wireless internet is installed in the administration wing of Chernoff Hall.

October 2007
Stan Brown and Alexei Neverov are awarded $75,000 by the Ontario Ministry of Research and Innovation for research on a 'green' method for deactivating contaminants such as chemical warfare agents, pesticides and insecticides.

November 2007
The Queen's Chemistry Innovation Council Annual Meeting is held on Friday, November 2. The QCIC Welcoming Dinner features Dr. Suzanne Fortier, President of NSERC, as Guest Speaker.

December 2007
Ruiyao Wang wins the *Staff Appreciation Award* for 2007.

Derek Pratt is awarded the 2007 John Charles Polanyi Prize in Chemistry.

Johann Brinkhorst (Pratt group) wins 2nd prize for his research poster at the 35th Ontario-Québec Physical Organic Mini Symposium.

Rick Boswell is appointed Assistant Director of Operations for the Innovation Park at Queen's University.

January 2008
Johann Jardine joins the department as its new Department Manager.

Nick Mosey joins the department as Assistant Professor in Computational and Theoretical Chemistry.

February 2008
Tucker Carrington is elected Fellow of the American Physical Society.

Vincent Dufailly (Beauchemin group) receives the Best Oral Presentation in Analytical Chemistry award at the 10th Annual Chemistry and Biochemistry Graduate Research Conference at Concordia University

Meredith Richards joins the department as Undergraduate Assistant for the General Office.

Message from the Head

BY BOB LEMIEUX

Embracing change is a theme that has found new relevance over the past year, whether it is in the broader arena of American presidential politics or, more locally, at Queen's University. This past year has seen major changes in our senior administrative staff, including the departure of Principal Hitchcock last April, the appointment of David Mitchell as Vice-Principal (Advancement) and, most recently, those of David Dodge as University Chancellor and Tom Williams as Principal. At the departmental level, we were certainly not immune to this wave of change. Most notably, our department Manager, Rick Boswell, left the department at the end of December to become Assistant Director of Operations for the Innovation Park at Queen's University. Rick had been a member of the Chemistry department staff for almost twenty years, the last nine years as Manager. He played a vital role in overseeing the Chernoff Hall building project from start to finish, and he worked diligently and very effectively over the past five years to make this state-of-the-art building work for all of us. Our new department Manager, Johann Jardine, comes to Queen's with over 18 years of management experience in both technical (Bell Canada) and financial sectors (Assurant Solution). She has brought a fresh new outlook on the job of managing the department, and she will play a key role in helping the department address the many challenges brought upon by increasingly limited government funding for post-secondary education. Our Advancement and Events Coordinator, Diane Sullivan, also left the department last December to take on the position of Executive Assistant with the Frontenac County Mental Health Services. Diane helped ramp up our fundraising and alumni relations activities, including the annual production of the QChem Chronicles. As part of a major office restructuring, Barb Armstrong has been assigned the new portfolio of Administrative and Advancement Coordinator, which includes the coordination of advancement activities and alumni relations, together with the coordination of day-to-day activities in the General Office.

In January, we welcomed our newest faculty member, Dr. Nick Mosey, an expert in the development and application of theoretical methods to study complex theoretical problems in materials science and surface chemistry. We recently concluded interviews for the next Alfred Bader Chair in Organic Chemistry, with the intent of having this prestigious endowed chair filled by July 2009. Again this past year, Chemistry faculty members have earned recognition for their outstanding research and service to the scientific community, including the 2008 Montréal Medal of the Chemical Institute of Canada to Stan Brown, the John Polanyi Prize in Chemistry to Derek Pratt, an Ontario Early Researcher Award to David Zechel, and the Queen's Prize for Excellence in Research to Suning Wang. Some of our faculty members have also been prominently featured in the news media, including Stan Brown for his work on new reagents for the safe disposal of chemical warfare agents, Simon Hesp for his work on new asphalt binders for longer lasting highways, and Philip Jessop for his work on switchable surfactants that can reversibly separate oil and water. Indeed, as our new slogan states, Queen's Chemistry faculty and students are truly "Making Chemistry Matter".

I'm pleased to announce that the Queen's Chemistry Innovation Council has a new Chair, Dr. Dale Cameron, who is Director of Research (Anti-infectives) and Manager of Intellectual Property at Migenix Inc. in Vancouver. Dale is a proud Queen's alumnus (B.Sc. (Honours), '89; Ph.D. with Greg Thatcher, '94) who is committed to further enhance the role of the Council in promoting the department in industrial and government circles (see Dale's column on page 7). One indication of the increasing involvement of Council members in departmental activities was the participation of Jan Oudenes (CEO, Alphora Research) and Lorenzo Ferrari (Head of Product Research, Lanxess) as judges in the inaugural competition for the Walter Smith Prize and M. Sullivan and Son Prize for the best 4th year research project presentations in Chemistry and Engineering Chemistry, respectively. The competition was held this year on April 7 along with the QCIC Careers Luncheon, which featured Dr. Isobel Ralston, President of Torealis Research, Inc.

The future certainly looks promising for Queen's Chemistry, and interesting opportu-

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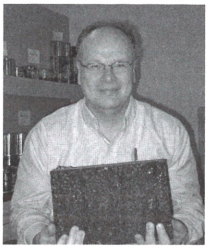


Imagine Roads That Never Crack ...

BY SIMON A.M. HESP, P.Eng.

Those of you who have traveled Ontario's highways may have unknowingly contributed to cutting-edge research on asphalt materials. Over fifteen years of studies conducted at Queen's University involve a remarkably successful partnership between government, industry and academia. The Ministry of Transportation of Ontario (MTO) has commissioned over 30 pavement trial sections that test a variety of straight and modified asphalt cements from nearly every Canadian supplier. Trials on highway 17 near Petawawa, highway 655 near Timmins, highway 417 near Ottawa and highway 427 just west of Toronto have provided new and valuable insights into this darkest of substances – asphalt cement.

Although our understanding of asphalt has greatly increased over the past 15 years, our roads have not necessarily improved. Asphalt cement from modern oil refineries often fails to meet road construction specifications and has to be modified to increase performance in extreme temperatures. Experience shows that, depending on what type of chemical or polymeric modification is applied, materials perform very differently – from extremely poor to exceedingly well – even when these materials achieve the same ranking under currently accepted grading systems.

To increase the grade of inferior asphalt, companies may employ catalytic air blowing (oxidation) techniques, acids (polyphosphoric and orthophosphoric), bases (sodium hydroxide and tall oils), or polymers (SBS, SBR, acrylates, epoxies, etc). Modifying asphalt with polymers is less popular since it typically costs more to produce the same grade of asphalt than with chemical agents. Our research, however, suggests that only certain types of additives in good quality base asphalts can produce higher quality, longer-lasting material. Current asphalt cement standards and testing procedures are not 'making the grade' when it comes to selecting the best quality asphalt for North American highways.

Asphalt cement makes up only about five percent by weight of asphalt, with the rest of the material being composed of aggregate and sand. However, the importance of this critical asphalt 'glue' cannot be overstated because it is responsible for over 90 percent of the long-term durability of flexible pavements. Asphalt cement is modified to increase high temperature deformation (rutting) resistance and improve the ability of the material to flow at low temperaures.

Our research has shown that the use of catalytic oxidation, phosphoric acids and other chemical agents can lead to an increased tendency for the asphalt cement to slowly 'gel' at low temperatures. This leads to reduced stress relaxation, increased thermal stresses and, unfortunately, increased levels of cracking distress. Current specification tests don't account for this gradual loss in performance, which leads to many inferior materials being applied to our highways.

For example, one 17 km stretch of highway 138 near Monkland, Ontario, which was made with phosphoric acid-modified asphalt cement, required almost 66 km of crack sealing material a mere six years after construction. On the other hand, an adjacent stretch made with better quality asphalt cement has provided smooth driving conditions for over eight years, in spite of bearing up to almost twice the volume of traffic. Other examples of superior performance can be found on an 18 km stretch of highway 28 near Burleigh Falls, and on a 30 km stretch of highway 11 near Cochrane, which have been virtually crack-free for 10 and 15 years after construction, respectively.

The good news is that, with new test methods developed at Queen's University, user agencies can finally specify superior performing asphalt cements in their contracts and thereby control road quality much more accurately than in the past. Furthermore, companies like Imperial Oil, who supported this research with significant financial and in-kind contributions, can see their superior-quality asphalt cements and modifiers recognized and gain a competitive advantage in the ca. 1.5 million ton/year Ontario asphalt cement market. The ultimate beneficiaries of this work, however, are motorists – once these specifications are fully implemented, expect to see significant quality improvements and fewer repair costs for Ontario's highways.

Simon Hesp has been investigating the failure mechanisms of asphalt cements and pavements for nearly 15 years as a faculty member in the Department of Chemistry at Queen's University. His engineering chemistry research has won awards in Canada and the United States and has received extensive coverage in the news media, including *CBC Radio, CKWS TV, The Kingston Whig-Standard, Toronto Star, Ottawa Citizen, Journal de Montréal, Sault Star* and *Timmins Press.*

continued from page 2

nities lie ahead, including the recent opening of the Innovation Park at Queen's University, which was made possible by a $21 million grant from the Ontario Government. This new regional 'co-location' initiative will initially be housed in the Novelis research and development centre (located at the corner of Princess and Concession streets), and will eventually expand to the 49-acre property adjacent to the R&D centre. The Innovation Park will bring academic and industry researchers together to undertake research in cross-disciplinary fields such as alternative energy, environmental technologies, and advanced materials. These are areas in which our researchers can make significant contributions, and the Chemistry department intends to play an active role in the development of the Innovation Park.

Clearly, we are embracing change at Queen's. In doing so, we are counting on the continued support of our alumni and friends to remain one of the leaders in chemical education in Canada. Your generous contributions to the Chemistry Gift Trust, the Undergraduate Equipment Fund, and to student prizes and scholarships are making a difference, and I thank you all very much on behalf of the department. As always, I look forward to meeting many of you during Homecoming, or at one of the Queen's receptions I hope to attend during the next year. This past Homecoming, it was my privilege to welcome members of the Class of '67 and give them a tour of Chernoff Hall (see picture on page 6). This was a wonderful experience for all involved, and I would encourage other returning classes to get organized and follow their lead. Hope to see you soon !

Message from the Manager

BY JOHANN JARDINE

I would like to take this opportunity to introduce myself to the readers of Q-Chem Chronicles. I have a technical background with over 18 years of management experience in the telecommunications and financial sectors. I joined the Chemistry department in January of this year and have been very impressed with both the facility and the dedication of the Faculty and Staff. Everyone has been very welcoming and I truly appreciate how generous everyone has been with sharing their knowledge. Since joining the Chemistry department we have had several staffing changes. Meredith Richards has joined the department as the Undergraduate Assistant, Robert Dumont is our Operational Assistant in Chemistry Stores and our most recent staff addition is Patricia Heard as our new Receptionist. We welcome our new staff members and look forward to their future contributions to the department.

We are continually looking for ways to streamline and improve the services we provide to the department. It makes sense to have one point of contact for most of the services we provide and my goal is to improve efficiencies within our department and to build strong working relationships with other departments and Faculties to share best practices.

We are already seeing the benefits of centralizing services in the Stores area. All ordering is processed through the Operational Assistant. We have created an on-line order form that is accessible from our Web page. We have developed better tracking methods for our orders and provide users with regular order status updates. Ease of ordering will better help us achieve our goal as the store of choice for the University. In the month of May we will start receiving all chemical orders for the Chemical Engineering department.

On the Facilities side of the house we have seen the addition of two fume hoods in the Liu Group Lab. Airflow setback in the undergraduate labs will be scheduled for testing during the summer. Initial set up of the Theoretical Computer Lab is well underway on the 5th floor of Chernoff. Future plans include renovations on the first floor to accommodate a new mass spectrometry and proteomics unit, and preparation for the new Bader Chair in 2009.

To sum it up, lots of new faces and new ideas are coming together to better improve the services we provide. I consider myself very fortunate to have been chosen as the successful candidate for this position and look forward to future opportunities for growth within the Chemistry department.

Lastly, I would like to thank Rick Boswell, former Department Manager, for all of his help and support as I transition into my new role within the department. I look forward to the privilege of providing departmental updates in the future issues of the QChem Chronicles.

4th Year Research Projects and QCIC Careers Luncheon

On April 7th, students in Engineering Chemistry (Applied Science) and Honours Chemistry (Arts and Science) presented the results of their 4th year research projects in a day-long mini-symposium. Incorporated into the presentations this year were the Sullivan and Smith Prize Competitions, intended to recognize outstanding achievements in undergraduate research. The Department was particularly fortunate to have two members of the QCIC, Jan Oudenes (Alphora Research) and Lorenzo Ferrari (LANXESS Inc.), present to serve as judges for the competitions.

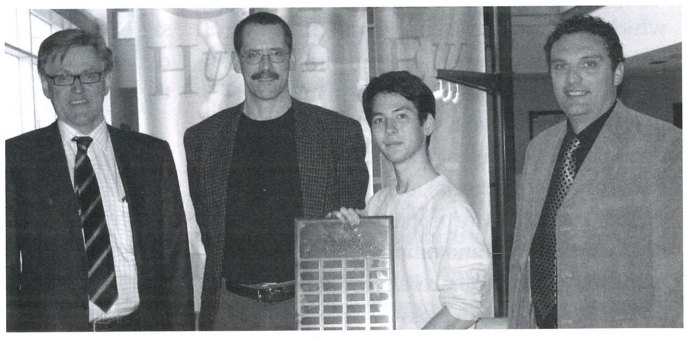
In the morning session (CHEM 417), Angela Leung, Michelle Edwards, Andrew Williamson and Brett Kamino presented the results of their research to the judges and audience, with Brett Kamino winning the Sullivan competition for his research into fibre-loop ring-down spectroscopy; the project was co-supervised by Dr. Peter Loock and Dr. Jack Barnes.

The QCIC Careers Luncheon was held in the 4th floor lounge of Chernoff Hall and featured Dr. Isobel Ralston, President of Torealis Research Inc. (Aurora, ON), a leading scientific management service for the pharmaceutical and biotech sectors. Dr. Ralston gave an overview of her career in the pharmaceutical industry and provided some timely advice to our graduating class on career opportunities for chemists in industry.

In the afternoon session (CHEM 497), the presenters were Zac Hudson, Alex Goldberg, Matt Wathier and Tom Markiewicz, with the judges selecting Tom Markiewicz as the winner of the Smith competition for his research on phenanthrenedione liquid crystals; this project was co-supervised by Dr. Bob Lemieux and Dr. Victor Snieckus.

The *M. Sullivan and Son Limited Scholarship* was recently established by the Sullivan family to recognize undergraduate research in chemistry; the Sullivan family played a significant role in the construction of our award-winning building, Chernoff Hall. The *Walter MacFarlane Smith Prize* was originally established by friends and colleagues of W. MacF. Smith as an award for the top student in CHEM 116. Recent changes to the chemistry curriculum led to the removal of this course, consequently the Department requested that the Smith Prize be re-designated for CHEM 497 to recognize the accomplishments of a student in Honours Chemistry, the programme for which Professor Smith served as Undergraduate Chair for many years.

Jan Oudenes, Bob Lemieux, Tom Markiewicz and Lorenzo Ferrari



Jan Oudenes, Bob Lemieux, Brett Camino and Lorenzo Ferrari

Au Revoir.....

BY ERWIN BUNCEL

A dedicated teacher and researcher in chemistry and environmental science for 39 years, Gary vanLoon is retiring (at least formally) this summer. Gary came to Queen's in 1969, having graduated form McMaster (B.Sc. 1962) and the University of Toronto (PhD. 1967) in analytical chemistry and followed by a 2-year teaching appointment at the Pooma University in India.

Environmental study was in its infancy back in the 1960's and 70's not only in Canada but also in the U.S. A visionary was needed to set up a teaching and research program and Gary became part of a group of profs who 'set up' the ENSC program, with a cross-appointment to chemistry. Later, in 2000-2001, Gary was appointed Acting Director of the flourishing Environmental Studies program.

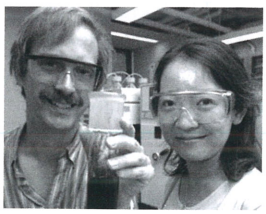
Gary's holistic outlook in teaching is aptly illustrated by his text 'Environmental Chemistry – a Global Perspective', co-authored by Stephen Duffy (Gary's former graduate student now Head of Chemistry at Mt. Allison). With two editions current and a 3rd in preparation, the text has been adopted by numerous leading universities in Canada, the U.S., China and elsewhere. Gary's other text, co-authored by Indian colleagues, is entitled, 'Agricultural Sustainability – Strategies for Assessment'. Its special focus is how one measures sustainability in the agricultural sphere. With such an eclectic range of interests it's no wonder Gary's teaching has been greatly appreciated by students – he is the recipient of 3 teaching awards in Chemistry and one in Environmental Studies. A different kind of award came Gary's way in 2005, from Canada Mortgage and Housing for contributing toward promotion of sustainability.

Gary's other 'extra curricular' activity is the Shastri Indo-Canadian Institute, to which Gary was invited in 2001 to represent Queen's. He became President of the prestigious organization in 2006 with responsibilities in advocating collaborative research programs between Canada and India.

Gary's research interests have covered wide areas in chemistry and environmental science where his guiding principle has been, how chemistry can be relevant to global issues. His publications cover areas such as water treatment chemistry (both potable and waste), acid rain and soil, environmental chemistry of pesticides, and chemical force microscopy. His current 'pet project' is integrated food and energy production system in agricultural areas.

Gary maintains that much of this success has come from collaboration with colleagues while the colleagues maintain that they have benefited immeasurably from his vast knowledge and the enthusiasm he brings to any project that he touches. Fortunately, we will continue to see him striding in sandals and cycling along Union Street (weather permitting) for Gary intends to continue these and other 'hobbies' with his usual enthusiasm.

Chemistry discovery joins list of Canada's chemical breakthroughs



Research into a 'green' chemical method for separating oil and water by Philip Jessop, Canada Research Chair in Green Chemistry, is highlighted by the Chemical Institute of Canada as one of the top Canadian Chemical Discoveries of the past 100 years. His reversible method of separating oil and water using a CO_2-activated, air-deactivated surfactant was one of 20 chemical breakthroughs – eight of them by Nobel Prize winners – listed in Canadian Chemical News magazine's May 2008 issue. Other notable researchers in the list included Frederick Banting, Gerhard Herzberg, John Polanyi and Michael Smith.

The new technology developed by Jessop and co-workers has potential as an environmentally safe alternative to existing oil recovery and manufacturing processes, which produce large quantities of toxic byproducts. According to Kerry Rowe, Vice-Principal (Research), "Dr. Jessop's creative and groundbreaking research on a variety of green chemistries has captured our attention, and certainly makes him deserving of this recognition." Also on the research team from Queen's are Chemistry graduate student Yingxin Liu and Chemical Engineering Professor Michael Cunningham, and from the Georgia Institute of Technology Drs. Charles Eckert and Charles Liotta.

2007-2008 DEPARTMENTAL HIGHLIGHTS

March 2008

The Chemistry Banquet is held on March 8th. Richard Oleschuk receives the 2008 *Chemistry Graduating Class Award for Excellence in Teaching*.

The 36th Southern Ontario Undergraduate Chemistry conference is held in Chernoff Hall on March 15th.

Robert Dumont joins the department as Operational Assistant in the Chemistry Stores.

April 2008

The 4th year projects competition and QCIC Careers Luncheon are held on April 7.

Theresa McCormick from Wang group won the prestigious 2008 NSERC postdoctoral fellowship award.

Bob Lemieux, Cathy Crudden and Peter Loock are awarded $294,493 from the Canada Foundation for Innovation to develop a Centre for Chiral Catalysis.

Bill Newstead is awarded the 1st Year Applied Science Teaching and Learning Award from the Faculty of Applied Science.

Dr. Andy Whiting, reader of Organic Chemistry at Durham University in the UK visits the Snieckus group.

The doctoral thesis of Dr. Ruibing Wang (Ph.D.,2007, Macartney) is selected as the "Mathematics and Physical Sciences Outstanding Thesis" for 2007-2008 by the School of Graduate Studies.

The 3rd Annual Materials and Nanotechnology Symposium is held in Chernoff Hall on April 23 and 24.

The following students win National NSERC awards for 2008-2009: Jenny Du (CGSD3), Zachary Hudson (CGSM), Irene Kwan (CGSD3), Mark Mohamed (CGSD2)

Ontario Graduate Scholarship recipients for 2008-2009 are: Tom Blackburn, Sonya Burrill, Steve Dickson, Sanela Martic, Istok Nahtigal, Danielle Norton, and Ian Wyman.

May 2007

The following students graduated with honours in 2008: Stephen Betts, Jiayan Chen, Laura Caroline Cherry, Terry Colbourne, Andrew James Fraser, Kevin Houlihan, Yuet Ming Lam, Angela Leung, Jessica Litman, Adam Marsalek, Jenna McBride, Thanh-Giau Nguyen, Robin Nuttall, Jennifer Sy, Julia Van Drunen, Christopher Witiw, Elizabeth Wong, James Frendo-Cumbo, Alexander Goldberg, Andrea Greschner, Zachary Hudson, Lauren Keyes, Julian Morey, Jonathan Saari, and Kelly Waterman.

The following undergraduate students received awards at graduation:
Department Medal – Zachary Hudson
Society of Chemical Industry Merit Award – Zachary Hudson
Hypercube Scholar – Andrea Greschner

Patricia Heard joins the department as the General Office Receptionist.

Stan Brown receives the 2008 Montreal Medal from the Canadian Institute of Chemistry

The department holds a Queen's Reception on May 25 at the 2008 Canadian Society for Chemistry Conference in Edmonton.

Homecoming Weekend 2008

will take place on September 26, 27 and 28

Call us or visit
http://homecoming.queensu.ca
for updates on the celebrations

36th Southern Ontario Undergraduate Chemistry Conference

The 36th Southern Ontario Undergraduate Chemistry conference was hosted by the Queen's Chemistry department on Saturday March 15, 2008, and welcomed more than 160 undergraduate students from all over Ontario to Chernoff Hall.

The day started with a plenary lecture filled with scientific and personal inspiration by Professor Kelvin Ogilvie of Acadia. The participants then split into different sections for talks and discussions. After lunch and afternoon talks, the participants gathered around the posters for more personalized exchanges.

The evening banquet was the occasion to learn more about the chemical industry and industrial careers, thanks to a special contribution by Dr Rui Resendes Director for Commercial Development (Chemistry and Materials Science) at PARTEQ. That was also the time to highlight the excellence of the students' presentations. In particular, we would like to congratulate the following award winners:

- *Organic Chemistry:* **Leo Lui**, University of Toronto (Best Talk); **Fanny Yuen**, Queen's University (Best Poster)
- *Inorganic Chemistry:* **Jonathan Casalis de Pury**, McMaster University (Best Talk); **Meredith Gullons**, University of Western Ontario (Best Poster)
- *Biological Chemistry:* **Mark Woodcroft**, Trent University (Best Talk); **David McRae**, Wilfrid Laurier University (Best Poster)
- *Physical/Theoretical/Analytical Chemistry:* **Kristina Cvrkalj**, University of Waterloo (Best Talk); **Julia van Drunen**, Queen's University (Best Poster)

Overall, a highly exciting and motivating event celebrating undergraduate research. Students from other Ontario universities were very impressed with the facilities of the Queen's Chemistry department and its dynamic atmosphere!

Welcoming Back the Class of '67

As part of their 40th Reunion activities at Homecoming 2007, members of the Chemistry Class of '67 were given a tour of Chernoff Hall, and met with two of their professors. Pictured here (from left to right) are Shirley Wheeler, Ken Russell (Professor Emeritus), John Latham, Heino Lilles, Jake Blair, Chris Brown, Bob Lemieux (Department Head), Norm Vanstone, Bob Wheeler (Professor Emeritus) Jamie Johnstone and George Beston.

Seminar Series

We are pleased to announce the following speakers have been confirmed for our 2008-2009 Seminar Series. For more information and dates, please visit our website at *http://www.chem.queensu.ca/chemistryN/About/seminarseriesN.asp*

Prof. Jeffrey Johnston, Vanderbilt University, Tennessee

Prof. Wenbin Lin, The University of North Carolina at Chapel Hill

Prof. Troels Skrydstrup, Aarhus Universitet, Denmark

Prof. Pierre Thibault, University of Montreal

Prof. Mario Leclerc, Laval University

Prof. Bradley Siwick, McGill University

Prof. Luis Colon, University at Buffalo

Prof. Wesley Allen, University of Georgia

Dr. Tom Moffat, National Institute of Standards and Technology

Prof. Martin Gruebele, University of Illinois – ***Jones Lecture***

Prof. Gerry Wright, McMaster University

Prof. Hanadi Sleiman, McGill University

Prof. Matthias Ernzerhof, University of Montreal

Prof. Steven Smith, Queen's University, Department of Biochemistry

Queen's Chemistry Innovation Council

A Message from Dale Cameron, Council Chair

Since its inaugural meeting in October 2000, the Queen's Chemistry Innovation Council (QCIC) has been finding ways to further the interests of the various members of the Dept. of Chemistry. Our mandate to promote the interaction between members of the department (at all levels) and members of industry, government, non-profit, etc. has been successful over the years. As a recent example, QCIC members (including a past QCIC chair) have recently been judges of the 4th year undergraduate projects where the M. Sullivan and Sons Ltd Limited Scholarship and the Walter MacFarlane Smith Prize in Chemistry were awarded.

The QCIC continues to work with the Chemistry Department to develop a new course in Practical Drug Discovery that will give students a taste of how industrial drug discovery is performed while offering access to industrial mentors at various stages of the project. This will hopefully usher in a novel way to allow interaction between students and industry and will be invaluable training for students thinking about a career in the pharmaceutical industry. Hopefully this will be the seed for the development of similar courses in other subdisciplines within the Department.

As we continue to develop the QCIC and evolve with the Department, we hope to build on the strong foundation that has been laid and offer even more initiatives to benefit the Department and its members. The Department is well situated to continue to meet the challenges of the future and continue to both generate cutting edge research results for the betterment of society and prepare each new class of students to embark on new journeys in Chemistry and beyond. The QCIC wishes our new graduates all the best and we know you will make us proud.

Woman to Watch

JOSEPHINE TSANG (Ph.D., Stan Brown) received a **Women in Science Fellowship** award from *L'Oreal Canada* and the *Commission for UNESCO*, and was featured as one of **"80 Women to Watch"** in *Chatelaine* magazine. She is currently working as a Postdoctoral Fellow at the University of Alberta.

Top Undergraduate

ZACHARY HUDSON, graduated this year with a cumulative academic average of 95.8% over the 4 years of his Honours Chemistry (SSP) degree program. His outstanding academic achievements have been recognised at the departmental level by the awarding of the **Department Medal** and **SCI Merit Award**, and at the faculty level by the awarding of the **Prince of Wales Prize** (top B.Sc., Honours student) and the **Governor General's Academic Medal** (highest academic standing in the Faculty of Arts and Science).

News from the Department of Advancement

The Department of Chemistry continues to work closely with the Department of Advancement to encourage and foster support from our alumni, donors and friends.

The wonderful generosity of many has been enormously valuable over the years and allows the Department to fund a variety of student and faculty initiatives that otherwise would not be possible. We have had terrific examples of gifts from our Chemistry Innovation Council members, including the Alphora Challenge made by Jan Oudenes to fund undergraduate equipment, and the wonderful response we have had from fellow QCIC members, the endowment of the McAdie Chemistry Doctoral Student Award by Dr. Harry McAdie, and the continuous generosity of Olive Macdonald, who established two discretionary funds at Queen's in Chemistry and Chemical Engineering. These funds are made possible by a charitable remainder trust established by her late brother, Roland Macdonald, a 1931 Queen's graduate in Engineering Chemistry. He wanted to make a gift to his alma mater,and he wanted to support his sister for life. The trust let him do both, and the income Olive receives from the trust is used to maintain the discretionary funds, even though she is not a Queen's alumna.

Roland Macdonald's planned gift will have an enormous impact on the subsequent development of the Department of Chemistry. A well-planned gift can reduce, or even eliminate, taxes, and it can substantially increase the donor's after-tax income. If you are interested in directing a bequest to the Department of Chemistry, please contact the Office of Planned Giving by calling 1-800-267-7837 and asking to speak to Faye Ransom. Please know that any communication about estate planning will be held in the strictest of confidence.

Please remember that all gifts (including the beneficial tax benefits of gifts of shares) to Queen's University can be directed to any project of your choice. For more information on supporting the Department of Chemistry, please contact any member of your Advancement Team.

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Recognizing Research Excellence

Again this year, Queen's faculty were recognized by their peers for their outstanding contributions to chemical research and to the chemical profession. **Prof. Stan Brown** received the *Montréal Medal of the Chemical Institute of Canada* as a mark of distinction and honour for his leadership and outstanding contribution to the profession of chemistry in Canada. **Prof. Derek Pratt** received the *John Charles Polanyi Prize* in Chemistry from David Onley, Lieutenant Governor of Ontario, during a ceremony held at Toronto's Massey College last fall. The Polanyi Prize was established by the Government of Ontario to recognize outstanding researchers in the early stages of their career at an Ontario university. **Prof. David Zechel** received an *Early Researcher Award* from the Ontario Ministry of Research and Innovation, which recognizes the best and brightest young research talent in Ontario. Finally, **Prof. Suning Wang** received the *Queen's Prize for Excellence in Research*, the highest honour given by Queen's University to recognize the research excellence of its faculty. One should note that five Chemistry faculty members (Wang, Brown, Becke, Baird, Natansohn) have received the Prize for Excellence in Research over the past ten years. The only other unit to repeat in that ten-year period is the Faculty of Law with two recipients.

TA Teaching Awards

In order to promote and recognize excellence in teaching (tutorial and laboratory) by Teaching Assistants in Chemistry in 1st, 2nd, and 3rd years, seven awards of $500 are repesented each year. Awards for the 2006-07 academic year were presented at the TA training day on September 6th, 2007:

William Patrick Doolan Prize in Chemistry

Guru Saravanabhavan

Varian Teaching Assistant Award

Michelle Douma

Fisher Scientific Teaching Assistant Award

Greg Potter

Merck Frosst Teaching Award

Brendan Flowers

David Thomas Teaching Assistant Award

Christa Huntley

Merck Frosst Teaching Award

Ryan Marien

Din Lal Teaching Assistant Award

John Dupont

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