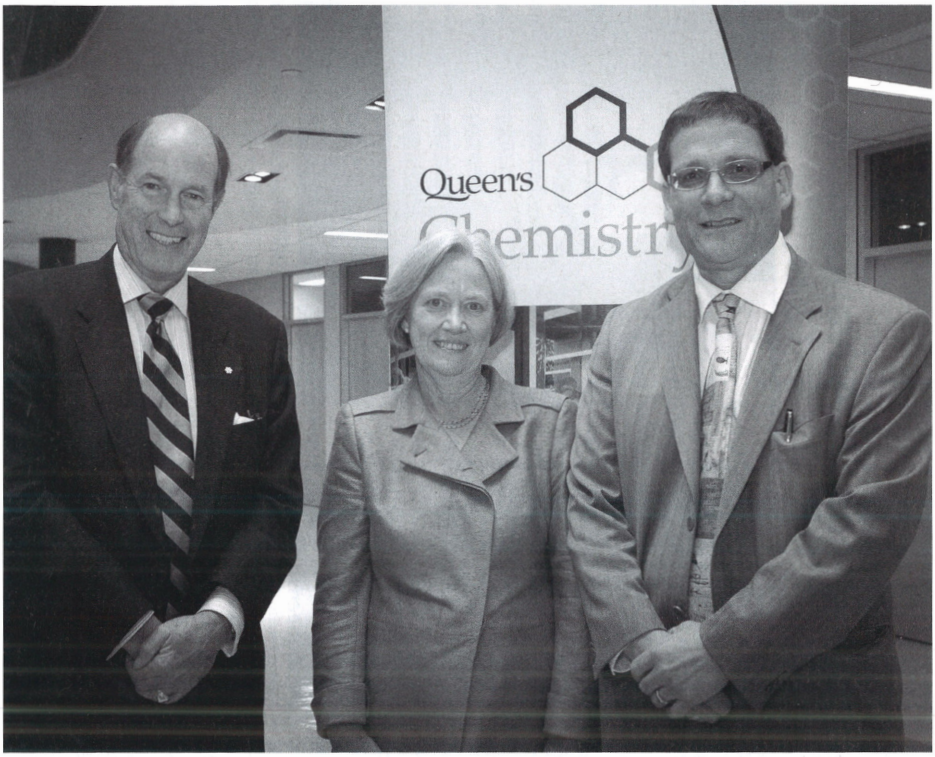
COMPLIMENTARY ISSUE

Q-CHeM CHRONICLES

Queen's UNIVERSITY

AUGUST 2011

Princeton University President returns to Alma Mater



Dr. Shirley Tilghman, a member of the Queen's Chemistry Class of '68 and President of Princeton University, was guest speaker at the 2010 Welcoming Dinner of the Queen's Chemistry Innovation Council. Dr. Tilghman is joined in this picture by Chancellor David Dodge and Principal Daniel Woolf

Photo by: Greg Black, Queen's University

Q-CHeM CHRONICLES

Queen's UNIVERSITY

AUGUST 2011

"Ode to Queen's Chemistry"

BY SHIRLEY TILGHMAN

I am often asked when I knew I would be a scientist, and I usually answer that I cannot remember *ever* wanting to be anything else. I grew up fascinated with numbers, and addicted to puzzles of all kinds. But I truly fell in love when I encountered the Periodic Table in high school. Its order and logic were immensely appealing. Once I understood that with a few rules about the nature of chemical reactions under my belt I could transform one chemical into another, I was hooked.

There were many girls who grew up in the 1960's dreaming about being a scientist who never realized their dreams. I was one of the fortunate ones, thanks to the wonderfully supportive environment I encountered as an honours chemistry student in the Department of Chemistry at Queen's. After a relatively anonymous first year of chemistry, physics and mathematics, which felt like an endurance race, I landed as a second year student in Professor Saul Wolfe's lab, and tasted scientific discovery for the first time. Wolfe, who equally terrified and entranced our class with his organic chemistry lectures, was working on the synthesis of penicillin in the hopes of finding a cost-effective method to produce that crucial antibiotic. My partner, Bob Bassett, and I were tasked with finding the conditions for converting an inert anhydropenicillin into a biologically active molecule. We tried hundreds of permutations and combinations of solvents and catalysts, always to the same effect – the *E. coli* bacterial lawns on which we tested our reactions grew like gangbusters. Then one day we opened the incubator, and saw a clearing in the lawn, telling us that we had synthesized an active antibiotic. I recall the hair standing up on the back of my neck, and my hands shaking uncontrollably. At that moment I knew I had to be a scientist.

What was so important about my Queen's experience were the opportunities to *do* science rather than simply study what others had done. In my third year I worked in Professor Al Norris' inorganic chemistry lab, and in my fourth year I returned to organic chemistry with Professor Walter Szarek. In each of these labs I was given tremendous independence to conduct my research, along with encouragement, advice and support when I needed it. I was treated like a scientist, and consequently I felt and acted like one. There have been many studies that have documented the very positive influence that an early experience in research has on retaining students in science, especially women. I was the beneficiary of that influence at Queen's.

As one of only eleven honours chemistry students I got to know every member of the faculty well, not just those in whose labs I was able to work. Their doors were always open for discussions, questions as well as advice. The best advice I received came from Professor Wally Breck, a chemist beloved by all for his dedication to teaching, and his good humour. He took me aside after my third year, and told me gently that although I was doing well, I did not have the sixth sense for chemistry that you need to succeed in the discipline. He was absolutely right, and I knew it. It was the kindest possible thing that a professor can do, for it set me on the path to finding the field that played to my intellectual strengths. Within a year I had discovered molecular biology, and the rest, as they say, is history.

Shirley Tilghman

Dr. Shirley Tilghman, BSc'68, is President of Princeton University. Following graduation from Queen's, she taught secondary school for two years in Sierra Leone, and then earned a PhD degree in biochemistry from Temple University in 1975. She conducted postdoctoral studies at the NIH, where she worked on cloning the first mammalian gene. She continued to make ground-breaking advances in molecular genetics as an independent researcher at the Institute of Cancer Research in Philadelphia, at the University of Pennsylvania, and then at Princeton University, where she was appointed Howard A. Prior Professor in Life Sciences in 1986. She was appointed 19th President of Princeton University in 2001. In 2010, she was awarded the prestigious Henry G. Friesen International Prize in Health Research by the Friends of CIHR and the Canadian Academy of Health Science.

2010-2011 DEPARTMENTAL HIGHLIGHTS

June 2010

Gregory Jerkiewicz is awarded a $50,000 research grant from the Nissan Motor Company.

July 2010

David Zechel is promoted to the rank of Associate Professor.

Cathleen Crudden is awarded a Discovery Accelerator Supplement of $120,000 over three years in the 2010 NSERC Discovery Grant Competition.

Michelle Boutilier joins the department as receptionist in the General Office.

Robin Roberts, Lead Hand in the Electronic Shop, is honoured by Queen's for 30 years of dedicated service to the University.

August 2010

Congratulations to Meredith Richards, Undergraduate Assistant in the Department, on the birth of her baby girl Claire Meredith Richards.

Philip Jessop is Chair of the 3rd International Conference in Green Chemistry in Ottawa, August 15-18th.

The Queen's community celebrates the grand opening of the GreenCentre Canada facilities at Innovation Park on August 19th.

September 2010

David Zechel is awarded a $35,000 Proof of Principle grant from GreenCentre Canada to develop halogen containing drug-like compounds by harnessing naturally occuring enzymes.

Philip Jessop receives the Queen's Prize for Excellence in Research, the highest honour given by Queen's University to recognize the research excellence of its faculty.

Christina Sun (Wang group) is the inaugural recipient of the 1960's Chemistry Scholarship, which was established by members of the chemistry classes of the 1960's to acknowledge the outstanding education they received in the Chemistry Department.

Julia van Drunen (Jerkiewicz group) receives the McAdie Doctoral Student Award

October 2010

The Queen's Chemistry Innovation Council annual meeting is held on Friday, October 1. The QCIC Welcoming Dinner features Dr. Shirley Tilghman, President of Princeton University and member of the Queen's Chemistry Class of '68, as guest speaker.

November 2010

Gary vanLoon and Stephen Duffy publish the 3rd edition of *Environmental Chemistry – a Global Perspective*.

Victor Snieckus is named the 2010 Laureate of The Republic of Lithuania in the Field of Physical, Biomedical, and Technological Sciences.

December 2010

The development of a new analytical method for large protein-ligand complexes using solid-state ^{17}O NMR spectroscopy by Gang Wu and co-workers is featured on the cover of *Angewandte Chemie*.

Christina Sun (Wang group) wins the best oral presentation award at the 2010 Inorganic Discussion Weekend conference.

Eric Keske (Crudden group) wins the 2009-10 Christopher Knapper Award of Excellence in Teaching Assistance.

Rob Dumont wins the 2010 Department of Chemistry Staff Appreciation Award at the annual Departmental Potluck.

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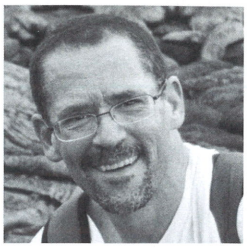


Message from the Head

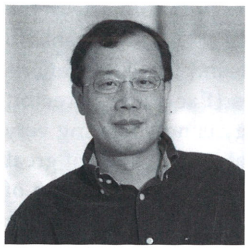
BY BOB LEMIEUX

Greetings Queen's Chemistry alumni! It is with mixed emotions that I write this column, which is my last as Head of the Chemistry Department. By the time you read this edition of the QChem Chronicles, I will have moved to the Faculty of Arts & Science office as Acting Associate Dean. As I step down from the Headship, I want to express my tremendous pride in the accomplishments of my faculty colleagues, our staff and our amazing students, and my gratitude to all of them for making Queen's Chemistry one of the best departments in Canada. There is no doubt that the last five years have been challenging on many fronts, but also rewarding in the successes we have achieved in teaching and research, in entrepreneurship, in promoting Queen's Chemistry nationally and internationally, in engaging our alumni and friends, and in playing a leadership role in ensuring that Queen's emerges from the current period of financial uncertainty in a strong position. Highlights of the past twelve months are featured in these pages and include success stories that we have come to expect from our faculty and students. Once again this year, Queen's Chemistry faculty members were recognized at the national level for their research excellence. Prof. Cathleen Crudden received the Clara Benson Award from the Canadian Society for Chemistry, and the Canadian Catalysis Lectureship Award from the Canadian Catalysis Foundation and the Chemical Institute of Canada. Cathy was also named Vice-President of the CSC for 2011-12, and will assume its presidency in 2012-13. This will be the second time in eight years that a Queen's chemist has assumed the presidency of the CSC – Stan Brown was President in 2004-05 – which is another clear indication that Queen's is recognized as one of the leaders in chemical education and innovation in Canada. Prof. Guojun Liu received the 2011 Captain Alfred E. Hunt Memorial Award from the Society of Tribologist and Lubrication Engineers for his work on reducing friction in automobile engines using functionalized nanoparticles as additives to engine oil (see p. 3). Prof. Gang Wu was awarded a Discovery Accelerator Supplement (DAS) in the 2011 NSERC Discovery Grant competition, which provide additional funding of $120,000 over three years to a select group of researchers who show strong potential to become international leaders in their respective field. This is the third time in the past four Discovery Grant competitions that one of our faculty has received a DAS from NSERC – Peter Loock and Cathy Crudden were DAS recipients in 2008 and 2010, respectively. At the university level, Prof. Philip Jessop received the Queen's Prize for Excellence in Research in recognition of his ground-breaking discovery of switchable solvents and surfactants, which has recently led to the creation of a new company, *Switchable Solutions, Inc.* (see p. 4).

On the teaching front, our online course in Organic Chemistry for Life Sciences, CHEM 281/282, is being offered for the second year and has earned rave reviews. The course enrolment this year has increased by ca. 50% from last year, and we intend to ramp up our marketing efforts to further increase the enrolment of students outside Queen's, and eventually develop an online version of our General Chemistry course. Although we have no intention to turn into the next virtual university, we believe that these online offerings represent excellent value propositions to students outside Queen's and could generate significant new revenues in years to come. On the staffing front, I'm pleased to report that, after a 3-year search, we have recently agreed on terms of employment with a world-class synthetic organic chemist who will succeed Prof. Victor Snieckus as the Alfred Bader Chair in Organic Chemistry in July 2012. Although I cannot reveal his identity at this time, I can say with confidence that this individual will uphold the standard of excellence set by Victor as Bader Chair and play a leadership role in the development of a new cross-disciplinary initiative in medicinal chemistry and drug discovery at Queen's. An official announcement of this exciting new appointment will be made sometime this fall.

So, in closing, let me say that it has been my privilege to serve the department as Head over the past five years, and to meet and engage with many alumni and friends of Queen's Chemistry. I hope that you will continue supporting our department by contributing to the Chemistry Gift Trust, the Chemistry Seminar Program, and to student prizes and scholarships. It is truly an amazing place where we continue *Making Chemistry Matter*!

Nonoparticles for Friction Reduction in Automobile Engines and Machines BY GUOJUN LIU



Friction occurs whenever there is motion. In automobile engines and machines, friction leads to energy waste and wearing of engine and machine components. Machine wearing is especially serious when a system is in the boundary lubrication regime, which means that the two opposing moving surfaces are touching one another rather than being separated by a lubricating oil film.

Currently, surfactant or detergent molecules are added to lubricant oils, and these molecules adhere to the metal surfaces to protect them from touching one another directly. Less force is required to shred off a surfactant layer than to shred off metal protrusions. Thus, these molecules help reduce friction in the boundary friction regime.

Our research team designed and prepared polymer nanoparticles that are dispersed in engine oils and possess surface functional groups that bond with metal surfaces. In engine oils at 0.25 wt%, these particles form a dense monolayer covering the metal surfaces. This layer is about 50 nm thick, which is much thicker than the monolayer thickness of ~2 nm formed by surfactants in current lubricant formulations.

Protected by these revolutionary nanoparticles, metal surfaces are effectively prevented from touching one another. This drastically reduces the friction between moving metal surfaces in tests designed to simulate the motions found in automobile engines. Even at a low concentration of 0.25 wt%, the nanoparticles perform much better than the surfactant additives currently used by many industries. Our best performing formulation is able to reduce the friction coefficient by 66% relative to what is currently achievable industrially. These are unprecedented results.

This discovery has earned our team the Society of Tribologists and Lubrication Engineers' Captain Alfred E. Hunt Memorial Award. This prestigious award is given annually to the STLE member who authors the best paper dealing with the field of lubrication or an allied field.

Dr. Guojun Liu is Professor of Chemistry and holds the Canada Research Chair (Tier 1) in Materials Chemistry at Queen's.

A New Micro and Nano Fabrication and Characterization Facility for Queen's

BY RICHARD OLESCHUK

"We have seen the future and it is small" .... Micro/nanofabrication and prototyping facilities are no longer a research luxury but rather a necessity for not only conducting cutting edge science but training future scientists and engineers. Queen's University, as part of a 5-year, $48 million project "Embedded Systems Canada" involving university researchers in 37 institutions, will be awarded $1.8 million in micro- and nano-fabrication infrastructure by the Canada Foundation for Innovation. I am currently working with Dr. Robert Knobel (Queen's Physics) to have the new equipment installed and up and running within a year. The EmSYSCAN infrastructure will shorten the microsystems development cycle leading to rapid commercialization, publication, and training of highly qualified personnel within a national and international multi-disciplinary research environment.The facility will significantly bolster current Queen's research strengths (e.g. photovoltaics, MEMS, microfluidics, sensors, and high performance materials) as well as promote developing strengths in optofluidics, photonics, sustainable energy and water treatment. It is hoped that the facility will act as a multidisciplinary "watering hole" fostering cross disciplinary research not only between academic groups (Queen's, RMC and St. Lawrence College) but also small-medium sized enterprises (SME's) housed both within Queen's Innovation Park and the broader Kingston community.

Dr. Richard Oleschuk is a Professor of Chemistry at Queen's.

Science Rendezvous Kingston!

BY JANNIFER ADAMS AND JULIAN KWOK

Is there any better way to bring science to life for kids and to spark a lifelong interest in science than to provide them with an opportunity to explore science through interactive, hands-on learning? Absolutely not, which is why events such as Science Rendezvous Kingston! are so important. Science Rendezvous is a free, one-day science festival designed to bring the general public, especially children, face-to-face with science. Founded in 2008 by the University of Toronto, this small grassroots festival has grown tremendously in four short years and through a collaborative partnership between universities, colleges, museums and science centres, hospitals and science outreach organizations, it became a national event this year, with events held in cities across Canada in early May.

On Saturday, May 7, 2011, over 500 people from Kingston and the surrounding communities came out to Queen's University to celebrate science at the first ever Science Rendezvous Kingston! and enjoyed a variety of hands-on activities, demonstrations, lab tours and talks organized by several departments from Queen's University, Royal Military College and St. Lawrence College, as well as Let's Talk Science and many of the local museums. As a lead-up to the festival, engaging public talks were given by Bob MacDonald, CBC host of "Quirks and Quarks," and Dr. Joe Schwarcz, a chemistry professor at McGill University whose goal is to demystify science for the general public.

As 2011 is designated by the United Nations as the International Year of Chemistry, Science Rendezvous Kingston! was a fantastic opportunity to showcase the Chemistry Department and to introduce chemistry to the next generation of children. The hands-on activities ranged from blowing up a balloon with baking soda and vinegar and creating an endothermic reaction inside a Ziploc bag to exploring pH with red cabbage juice, using colour chromatography to discover the colours hidden within a black marker and investigating the interesting properties of a non-Newtonian fluid created by mixing cornstarch and water. While all activities were thoroughly enjoyed, the crowd favourite was definitely the Chemistry Show, which included a glowing pickle, ethanol cannon, elephant toothpaste and a flaming gummy bear, just to name a few.

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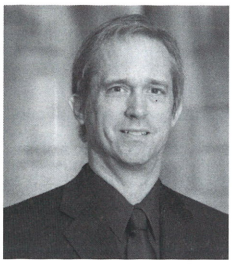
A New Company: Switchable Solutions Inc.

BY PHILIP JESSOP



A new company, Switchable Solutions Inc., has been created from a technology developed in the Chemistry Department at Queen's. The Jessop group developed a solvent that is unusual because it can be removed from products without the need for distillation. What does that mean and why is it important? Here's a little background:

Solvents are the liquids used to either extract valuable chemicals from biological materials (tree bark, leaves, etc.) or to bring two chemicals together so that they can react and make a product. Industry traditionally uses volatile solvents, even though they are usually flammable, narcotic, and smog-forming, because volatile solvents can be removed from the product by distillation. Distillation (i.e. evaporation by heating) has been the standard method of removing solvents for centuries. The new solvents developed at Queen's can be removed without distillation and are much less volatile, flammable, narcotic, and smog-forming.

PARTEQ Innovations, Queen's technology transfer office, licensed this discovery to GreenCentre Canada (GCC), where it has been extensively tested and further developed. In November, GCC created the new company, Switchable Solutions Inc. (SSI), to carry the technology into the market. We were then very fortunate to welcome Mark Badger, the head of the Canadian Plastics Industry Association (CPIA), to the company as the CEO. Mark has two decades of management experience in the plastics industry and has since been named Leader of the Year by the CPIA.

The two GCC researchers involved in the development, Dr. Dominik Wechsler and Ms. Amy Holland, are both formerly of the Chemistry Department at Queen's. Thanks to their efforts in the lab and the tireless efforts of Dr. Rui Resendes (Executive Director, GCC), the technology is now looking very promising for several applications of great interest in industry, including recycling of plastics and cleanup of wastes in the drilling and oil sands industries. Watching this technology grow from a simple idea into a research project and now to a company has been exciting for all involved. I can't wait to see what happens next!

Dr. Philip Jessop is Professor of Chemistry and holds the Canada Research Chair (Tier 2) in Green Chemistry at Queen's; he is also Technical Director of GreenCentre Canada. SSI recently announced the building of its first plastic recycling plant in Mississauga, ON, which will be able to recycle ca. 2 million kgs per year of post-consumer plastic materials using the Jessop switchable solvent technology.

4th Year Research Projects and QCIC Careers Luncheon

On April 11, students in Engineering Chemistry (Applied Science) and Honours Chemistry (Arts and Science) presented the results of their 4th year research projects; 42 students in total gave oral presentations during this day-long minisymposium. The Sullivan Prize and Smith Prize competitions recognizing outstanding achievements in undergraduate research in Applied Science (CHEM 417) and Arts and Science (CHEM 497), respectively, were adjudicated by two members of the Queen's Chemistry Innovation Council, Dr. Adi Treasurywala and Dr. Peter Kazmaier. The Sullivan Prize competition featured presentations by Manoj Mathew, Grant Ongo, Bithun Sarkar and Scott Genin, with Bithun taking the prize for his project on "Analyte Refocusing in Open Tubular Chromatography Using Flow Reversal", which was supervised by Prof. Peter Loock. The Smith Prize competition featured presentations by Alex Stewart, Anton Toutov, Kezia Burke, Jennie Briard, and Victoria Stroh, with Alex taking the prize for his project on "Triarylboron-containing Paddle-Wheel Complexes: Towards MOF-based Sensors for Small Anions", which was supervised by Prof. Suning Wang.

The QCIC Career's Luncheon was held in the 4th floor lounge of Chernoff Hall and featured Dr. Adi Treasurywala, President, ArrowCan Partners Inc. Adi gave an overview of his career and shared with our graduating class his thoughts on career planning and opportunities for chemistry graduates in the chemical industry and elsewhere.

Ralph Whitney, Adi Treasurywala, Bithun Sarkar, Peter Kazmaier, Peter Loock, Bob Lemieux

Peter Kazmaier, Alex Stewart, Adi Treasurywala, Bob Lemieux

Message from the Manager

BY JOHANN JARDINE

This year, Chernoff Hall has undergone several lab facility renovations and relocations as we prepare for the arrival of the next Bader Chair in July 2012. The first stage was completed in early February with Dr. Hugh Horton's group moving from the third floor (CHE 331) to a new space on the first floor of Chernoff Hall (CHE 100) that used to be the departmental computer cluster. The next stage of this project was the relocation of Dr. Simon Hesp's group from CHE 339 to CHE 331. Renovations and ventilation alterations in CHE 331 are completed and Dr. Hesp will take residency of his new lab in July. Because the building has reached the limit of its ventilation capacity, the third stage of this project will be to add another air handling unit in the penthouse of Chernoff Hall. This will increase the ventilation capacity of the building to accommodate up to 25 additional fume hoods. The lab in CHE 339 will be fitted with 5 additional fume hoods and one fume hood will be installed in Dr. Horton's new lab in CHE 100.

I am pleased to announce this year's department staff award winner – Robert Dumont. Robert joined the Chemistry department in 2008 as the Operational Assistant for Science Stores. Robert has been instrumental in implementing efficiency improvements in our stores operation including bar-coding of all stores inventory, amalgamation of the Physics and Chemistry stores, on-line catalogue with pictures to better meet the needs of our customers, and monthly billing improvements for the researchers and customer order updates. In July 2010 the department welcomed Michelle Boutilier as our new receptionist. Michelle is a graduate of the office Administration Medical/Legal double diploma program at St. Lawrence College.The first phase of the new **Student Administration System** was launched in October 2010, with Admissions and the first phase of Financial Aid. The rest of the new system was launched in March 2011 and will impact incoming Queen's students in the fall. Staff attended training sessions in February and had the opportunity to input the 2011/2012 timetable on the new system. The third phase of the QUASR system will involve Human Resources and is scheduled to be launched in December 2011. I am pleased to report that the staff is embracing this new system and all feedback has been extremely positive.

I can look back at this year as another rewarding year in the Department of Chemistry with lots of changes and opportunities for growth. The staff continues to embrace change and they are continually looking for areas where efficiencies can be improved in the future.

Congratulations to the class of 2011!

Front row (from left) *Anton Touton, JingSi Jiang, Alva Woo, Kristina Stevenson, Sarah Smart, Jennie Briard, Charlotte Warren, Adam Friedman, Alex Listigovers*
Back row (from left) *Cindy Li, Elizabeth Penn, Melanie Vandertoorn, Alexander Stewart, Paul Stillman, Victoria Stroh*

2010-2011 DEPARTMENTAL HIGHLIGHTS

January 2011

Susan Cole (Pathology and Molecular Medicine), Richard Oleschuk (Chemistry), and Tom Massey (Pharmacology and Toxicology) are awarded a $1 million CFI-LOF grant for a new high-resolution mass spectrometer to be housed in the Mass Spectrometry and Proteomics Unit in Chernoff Hall.

Peter Loock, Bithun Sarkar (Loock group) and Tragically Hip guitarist Paul Langlois demonstrate the "Photonic Guitar" on the Discovery Channel program *The Daily Planet*.

February 2011

Philip Jessop and his group demonstrate his groundbreaking switchable solvent technology on the Discovery Channel program *The Daily Planet*.

Zac Hudson (Wang group) is awarded the 2011 Ludo Frevel Crystallography Scholarship.

March 2011

Suning Wang is awarded a $35,000 grant from PARTEQ to test smart materials as sensitive oxygen detectors.

April 2011

The Chemistry banquet is held on April 2. Richard Oleschuk receives the 2011 Chemistry Graduating Class Award for Excellence in Teaching.

The 4th year project presentations, the Smith Prize and Sullivan Prize competitions, and the QCIC Careers Luncheon are held on April 11.

Cathleen Crudden receives the 2011 Canadian Catalysis Lectureship Award, sponsored by the Canadian Catalysis Foundation and the Chemical Institute of Canada. The award is made to a researcher who is recognized as a leader in catalysis in Canada.

Guojun Liu receives the 2011 Captain Alfred E. Hunt Memorial Award from the Society of Tribologist and Lubrication Engineers. The award is presented to a STLE member authoring the best paper published during the proceeding year in a Society publication.

Diane Beauchemin is interviewed at the 2011 Pittcon Tradeshow in Atlanta, Georgia about her research on increasing the robustness of inductively coupled plasma mass spectrometry techniques.

The following students win national NSERC postgraduate awards for 2011-2012: Anton Toutov (CGSM), Jessica Litman (PGSD3), Gillian Mackey (PGSD3), Christina Sun (PGSD3).

Ontario Graduate Scholarship recipients for 2011-2012 are: Jeff Crouse, Andrew J. Fraser, Eric Keske, Gurpaul Kochhar, Jiasheng Lu, John Saunders, Justin Smith, Julia vanDrunen, Stephen Walker

Mohammad Alsabet (Jerkiewicz group) is appointed Assistant Professor of Chemistry at Kuwait University.

Gang Wu is awarded a Discovery Accelerator Supplement of $120,000 over three years in the 2011 NSERC Discovery Grant Competition.

May 2011

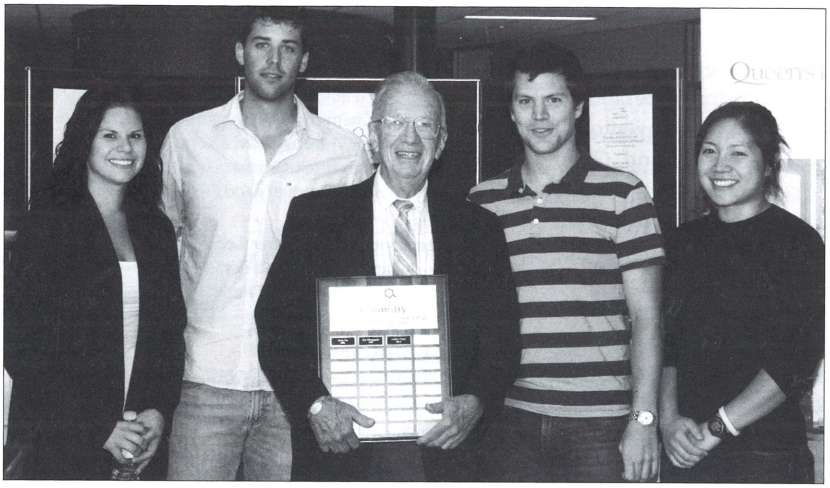
The following students graduated from honours Chemistry with distinction in 2011:

Kezia Burke, JingSi Jiang, Alexander Stewart, Anton Toutov.

Cathleen Crudden receives the Clara Benson Award from the Canadian Society for Chemistry. This award is presented to a woman who has made a distinguished contribution to chemistry while working in Canada.

The department holds a reception on June 6 at the 2011 Canadian Society for Chemistry Conference in Montréal, Quebec.

McAdie Award Winners



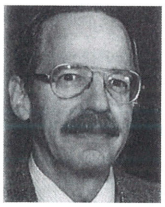
The four recipients of the McAdie Award together with Dr. Harry McAdie at the graduate and TA awards ceremony: (from l to r) *Julia van Drunen (2011), Andrew Fraser (2010), Dr. McAdie, Ben Glasspoole (2009) and Jenny Du (2008).*

Inaugural 1960's Chemistry Scholarship Winner

Dr. Bob Lemieux presents the first 1960's Chemistry Scholarship to *Christina Sun* at the graduate and TA awards ceremony.

Saying Goodbye

George William Hay



Professor Emeritus of Chemistry at Queen's University, died at Kingston General Hospital on Easter Monday, April 25th, 2011 in his 82nd year after a struggle with cancer. George joined the Department of Chemistry in 1963, and taught Organic Chemistry until his retirement in 1994.

George received a B.Sc. and an M.Sc. from the University of Manitoba, and after a period of working in the area of forensic science, he attended the University of Minnesota where he earned the Ph.D. degree under Professor Fred Smith, a legendary name in the field of Carbohydrate Chemistry. Carbohydrate Chemistry remained the focus of George's research interests at Queen's. Most of his publications were the result of collaborations with others at Queen's, in particular Wally Breck, Gary Vanloon, and Walter Szarek in the Department of Chemistry, Andrew Kropinski in the Department of Microbiology, and Bill Depew in the Department of Medicine. The longest collaboration was with Walter Szarek and involved the application of modern Carbohydrate Chemistry to problems in biology and medicine. Three specific projects concerned non-nutritive, carbohydrate sweeteners, the targeted delivery of drugs to the liver, and positron emission tomography or PET. The PET project at Queen's was a particularly exciting one and involved the assembling of a team of neurologists, physicists, computer scientists, together with George and Walter Szarek. When the project commenced in 1977, the area of PET was in its infancy. The key compound of interest was then, and remains today, the F18-labelled carbohydrate, flourodeoxyglucose, and rapid, convenient syntheses of this compound were developed at Queen's.

George's life was an inspiring example of a life well-lived. He was truly devoted to his God, family, community, and profession. His dedication, kindness, and co-operative spirit were highly respected by his faculty colleagues, and the students and staff in the department of Chemistry.

Dr. R.D. Heyding

Dr.R.D.Heyding, Head of the Department from 1971 to 1979, died in Kingston in May. He came to Queen's as an Associate Professor in 1962, one of the early members of the group who were appointed to deal with the great expansion of the University. He was an inorganic chemist with a special interest in x-ray diffraction. He rapidly developed a research program on structures of inorganic materials, helped by the efforts of some excellent graduate students. In addition to giving advanced lectures, he was popular as a lecturer in Chemistry 2 in the Faculty of Arts and Science.

The University student population was capped at 10000 by 1971 and Dr. Heyding took over as Head during a period of financial restraint. In spite of this, the Department continued to build its research facilities and maintain high standards of teaching. Don Heyding was a professional engineer and he used his wide experience in both the Faculties of Arts and Science and Applied Science.

During the 1980's his first-year teaching was in the Faculty of Applied Science. He made every effort to get to know his students; Saturday tutorials were surprisingly well attended, helped in part by the home-made cookies. His main lab was on the first floor and students of all years could easily find him and discuss their problems.

He retired in 1990 but continued to work in his ground floor lab. With the help of student research assistants, he advanced considerably x-ray analysis of polyethylenes. His advice and help were sought for many years. He enjoyed all aspects of his work at Queen's, but above all he liked interacting with people and not least his "tads".

News from the Department of Advancement

We are very grateful to have supportive alumni and friends who are inspired to make a difference at Queen's. Your support is instrumental in upholding our long-standing tradition of excellence.

The Department of Chemistry delivers an outstanding university experience, both inside and outside the classroom. We continue to attract exemplary students and world-class faculty and researchers. Thank you for making a difference through your generosity and support.

We are happy to help you explore how you can give back to Queen's and answer any questions about giving opportunities and priorities. You can make a gift online at your convenience by visiting **www.givetoqueens.ca /chemistry.**

Please feel free to reach us at the numbers below. We are also pleased, if possible, to set up a personal visit to discuss specific projects or ways you can support the department, either now or in the future. Every gift makes an impact. Thank you for your consideration.

Contact information

Carrie Miles
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Lisa Sykes
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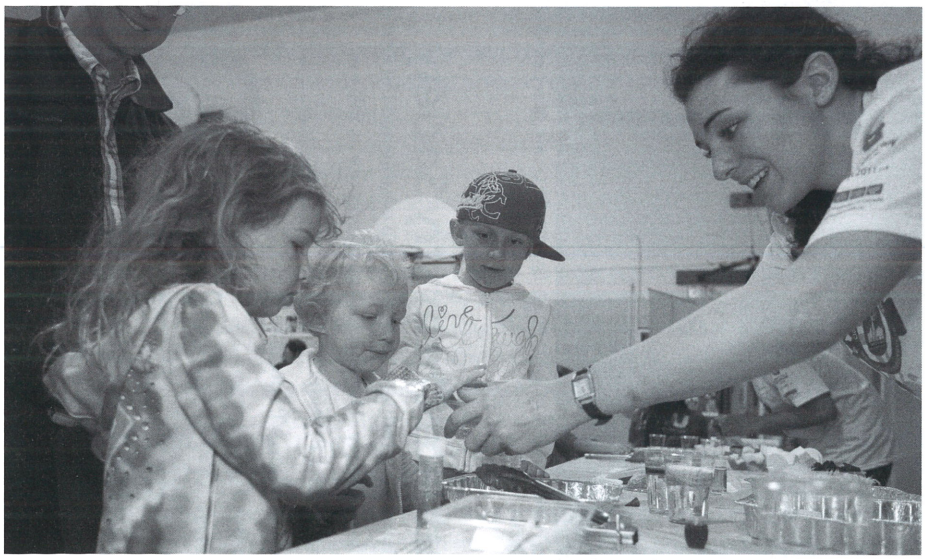
Please know that any communication about giving and estate planning will be held in the strictest of confidence.

Science Rendezvous Kingston! *continued from page 3*

It was an awesome day and it was made possible by the Community Outreach Centre at the Queen's University Faculty of Education who coordinated the event, the Chemistry Department and Queen's Graduate Chemistry Society who provided us with funding, and the following chemistry graduate students who volunteered their time: Parisa Akhski, Trisha Ang, Mohammad Ashtari, Klaus Bescherer, Jason Bornstein, Jeff Crouse, Darrell Dean, Matthew Thompson, Marieke Hutchinson, Brendan MacGillivray, Gillian Mackey, Lili Mats, Fern McSorley, Ian Rupar, John Saunders, Justin Smith, Stephen Walker. Be sure to check out www.sciencerendezvous.ca for information about next year's festival. Hope to see you there !



Rachel, Erika and Melanie Oleschuk checking out a Science Rendezvous display

Seminar Series 2011-2012

We are pleased to announce that the following speakers have been confirmed for our 2011-2012 Seminar Series.

For more information and dates, please visit our website at **http://www.chem.queensu.ca/chemistryN/About/seminarseriesN.asp**

Prof. Shigehiro Yamaguchi
Nagoya University, Japan

Prof. John Brown
University of Oxford, UK

Prof. Luis Echegoyen
University of Texas, USA

Prof. Christophe Coutanceau
University of Poitiers, France

Prof. Ralph Nuzzo
University of Illinois at Urbana-Champaign, USA

Prof. Javier Giorgi
University of Ottawa

Prof. Hicham Fenniri
University of Alberta

Prof. Michael Heinekey
University of Washington, USA

Prof. Alexander Brolo
University of Victoria

Prof. Daniel Leznoff
Simon Fraser University

Prof. Mark Taylor
University of Toronto

Prof. Claude Dalpé
Royal Military College

Prof. Fraser Stoddart
Northwestern University, USA

Prof. Peter Bohn
University of Notre Dame, USA

Prof. Dennis Curran
University of Pittsburgh, USA

Prof. Alenda Luzar
Virginia Commonwealth University, USA

Prof. Miguel Garcia-Garibay
UCLA, USA

Prof. Raymond Kapral
University of Toronto

Sergio Minki
Clarkson University, USA

Marek Pruski
Iowa State University, USA

Oliver Lebel
Royal Military College of Canada

Jean M.J. Frécht
University of California at Berkeley, USA

The Chemistry Seminar Series is supported by generous donations from the Friends of Queen's Chemistry.

Friends of Queen's Chemistry

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, the following awards are presented each year. Awards for the 2009-10 academic year were presented at the graduate and TA awards ceremony on September 9, 2010:

David Thomas Teaching Assistant Award — Andrew J. Fraser
Fisher Scientific Teaching Assistant Award – Zac Hudson
Din Lal Teaching Assistant Award – Elize Ceschia
Agilent Technologies Excellence in Teaching Assistant Award – Nicole Day
William Patrick Doolan Prize in Chemistry – Patrick Cashin
Department of Chemistry TA Award for Excellence in Teaching – Gillian Mackey

TA Award recipients (left to right): *Nicole Day, Patrick Cashin, Elize Ceschia, Zac Hudson, Gillian Mackey, Andrew J. Fraser*

Graduate Chemistry Society

The Chemistry graduate students have established the Queen's Graduate Chemistry Society. The elected executives are as follows:

John Saunders, President
Stephen Walker, VP Internal Affairs
Alaina Boyd, VP Finance
Nicole Day, VP External Affairs
Yoseif Makonnen, 3rd Floor Rep
Maria Varian, 4th Floor Rep
Tamara de Winter, 5th Floor Rep

Graduate Chemistry Society

www.chem.queensu.ca/grad/qgcs
qgcs@chem.queensu.ca

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