

COMPLIMENTARY ISSUE

Q-CHeM CHRONICLES



Queen's
UNIVERSITY

AUGUST 2012

Excellence in Teaching and Research



Professor Suning Wang received the 2012 *Chemistry Graduating Class Award for Excellence in Teaching* and is one of only seven recipients nationwide of the prestigious 2012 Killam Research Fellowships, awarded by the Canada Council for the Arts.

Q-CHeM CHRONICLES



AUGUST 2012

Excellence in Teaching and Research

Highlights in the department in March were almost simultaneous announcements that Professor Suning Wang received the *2012 Chemistry Class Award for Excellence in Teaching* and that she is one of only seven recipients nationwide of the prestigious 2012 Killam Research Fellowships, awarded by the Canada Council for the Arts. The former award recognizes the exemplary efforts that Suning has made in undergraduate and graduate teaching in recent years, while the latter award is recognition of the distinguished contributions by Suning in organic/inorganic materials chemistry. Ironically, in view of her teaching talents, the Killam will relieve Suning from teaching and administrative responsibilities for two years so that she can dedicate her time to research.

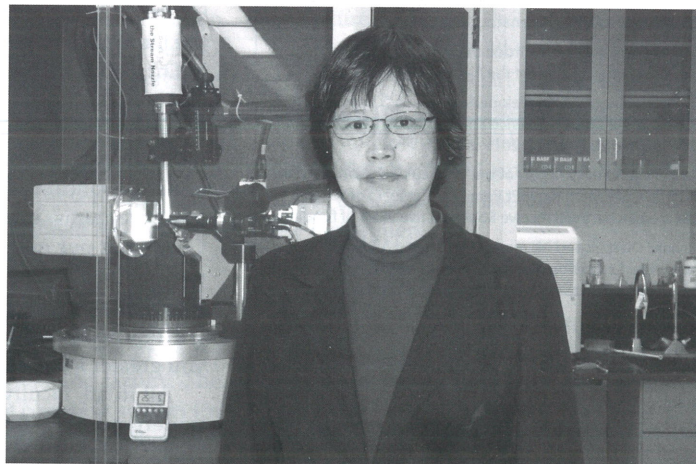
Suning obtained her B.Sc. in chemistry from Jilin University, China, and was one of forty students in 1982 who succeeded in obtaining a Chinese Chemistry Graduate Program Fellowship (CGP, also known as the "Doering program" because it was initiated and directed by the late professor William von E. Doering at Harvard University (1917 – 2011)) to study in the United States. She obtained her Ph.D. degree in chemistry at Yale University in 1986 and, after postdoctoral work at Texas A&M University, she joined the Department of Chemistry and Biochemistry at the University of Windsor as a faculty member. In 1996, Queen's University attracted her here through the Queen's University National Scholarship program, and she is currently a Queen's University Research Chair. In addition to the Killam research fellowship, her research achievements have also been recognized by the Alcan Award of the CSC (2007), the Rutherford Memorial Medal in Chemistry of the Royal Society of Canada (2000) and the Excellence in Research prize of Queen's University (2007).

Suning has also made outstanding contributions to the teaching of the next generations of chemists at the undergraduate and graduate levels. Her excellence in undergraduate teaching was recognized by an Excellence in Teaching Award in 2010 in addition to that won this year, and she has supervised the research of more than 30 graduate students, a dozen postdoctoral fellows and many undergraduate students.

Suning's research involves the development of a new generation of efficient and stable blue phosphorescent emitters for organic light emitting devices (OLEDs), a highly competitive research field. Energy consumption by lighting devices for homes and businesses in North America constitutes ~15-20% of total energy consumption. For traditional incandescent light bulbs, ~98% energy input is wasted as heat instead of producing light. Fluorescent light bulbs are more efficient, consuming ~25% less energy than incandescent light bulbs. Nonetheless, due to the presence of mercury vapour inside the fluorescent light bulbs, they do pose a long term environmental concern.

Organic light emitting diodes (OLEDs) that convert electric energy to light have recently emerged as a cutting-edge technology for information displays (TV and computer monitors, cell phones etc) and solid-state lighting devices. Compared to fluorescent light bulbs, OLEDs are much more energy efficient because their operating voltage is typically less than 10 V, and are much more environmentally friendly because of the lack of toxic substances such as mercury. Furthermore, OLED lighting is highly versatile and can be used on either solid substrates such as glass or flexible substrates such as plastics. Thus a room that is illuminated by "artistic" lighting devices such as a glowing wall panel or a glowing ceiling tile is no longer a fantasy but a reality of the modern world.

Current OLED technologies rely on fluorescent blue emitters to produce white lighting devices or full-color display devices, which greatly limits device efficiency. In contrast, phosphorescent emitters can increase the device efficiency by 3-4 fold. Thus there have been intense international research efforts in the development of high efficiency phosphorescent materials for OLEDs. Among phosphorescent materials, blue phosphorescent compounds – a key color component in high efficiency OLED-based white lighting devices – are the most challenging due to their poor stability in devices. Suning's team discovered recently that by incorporating a triarylboron group with an appropriate metal ion such as Pt(II), highly efficient phosphorescent molecules with tunable colors can be obtained, which lead to high performance OLEDs. Using this general strategy, her team aims to develop a new generation of blue phosphorescent materials that have high emission efficiency and adequate stability for use in blue and white OLEDs.



2011-2012 DEPARTMENTAL HIGHLIGHTS

May 2011

Congratulations to Rebecca Holmberg of the Jerkiewicz group who wins the best Student Poster Award at the Symposium of the Canadian section of the Electrochemical Society.

June 2011

A system to detect microbes such as *E. coli* in water developed by Stephen Brown and his team is highlighted at the American Water Works Association's Annual Conference and Exposition June 12-16.

A new company based in Mississauga, Switchable Solutions Inc. uses the "green" technology discovered by Phillip Jessop of the Department of Chemistry.

July 2011

Mike Baird is appointed Interim Head of the Department until June 30, 2012.

Bob Lemieux is appointed Acting Associate Dean in the Faculty of Arts and Science until June 30, 2012.

Suning Wang is appointed the Associate Editor for RSC Advances dealing with inorganic and materials chemistry manuscripts.

Richard Oleschuk and Simon Hesp are promoted to the rank of Professor, Anne Petitjean is promoted to the rank of Associate Professor.

August 2011

David Zechel, along with visiting professor Bjarne Hove-Jensen and Ph.D. student Fern R. McSorely, are featured in the Proceedings of the National Academy of Sciences, USA. The group has characterized a protein complex which is involved in the catabolism of phosphonic acids.

September 2011

Jessamyn Little (Stephen Brown 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.

Gurpaul Kochhar (Mosey group) receives the McAdie Doctoral Student Award.

Nolan Horner (SWEP student in Beauchemin group) receives an undergraduate travel award from the Canadian Society for Analytical Sciences and Spectroscopy.

October 2011

Guojun Liu is renewed as a Tier 1 Natural Sciences and Engineering Canada Research Chair in Materials.

Victor Snieckus is awarded the 2011 Queen's Prize for Excellence in Research, the highest honour given by Queen's University to recognize research excellence.

Phillip Jessop presents a lecture on "Switching to Green Chemistry" to MPs and Senators in Ottawa.

Gregory Jerkiewicz is awarded the R. C. Jacobsen Award of the Canadian section of the Electrochemical Society.

The "photonic guitar" developed in the Loock Group is on exhibit at the Canada Science and Technology Museum in Ottawa from October 20, 2011 until April 2012.

Gregory Jerkiewicz is part of the "Strategic Network in Low-Pt PEMFC Research (Low-Pt Pem Cf)". The team of seventeen researchers will receive \$5M over five years of funding.

Richard Oleschuk and his research team and AB SCIEX have partnered to develop a multi-nano-electrospray interface based upon microstructured optical fibre technology.

November 2011

Suning Wang's research on Phosphorescent materials for OLEDs is awarded a \$460,000 NSERC Strategic research grant.

Guojun Liu is invited to serve on the Editorial Advisory Board of Macromolecules/ACS Macro Letters.



Message from the Head

BY MIKE BAIRD

Bob Lemieux was appointed Acting Associate Dean in the Faculty of Arts and Science in June, 2011, and I was asked on short notice to accept an appointment as Interim Head of the Department for the period July 1, 2011 to June 30, 2012.

I accepted, of course, and am extremely pleased to be able to report yet another fine year in the history of the Department of Chemistry at Queen's. For instance, we were all gratified to learn that our department maintains its top five ranking among Canadian chemistry departments in the 2011 QS World University Rankings in Chemistry. This in spite of the fact that we remain a medium sized department, smaller than many of the departments deemed "inferior".

Indeed, a visiting speaker from Oxford commented this year that we are hitting well above our weight.

Our combined Honours Chemistry and Engineering Chemistry graduating classes totalled about 60 this year, very close to the all time high, and we also graduated 20 M.Sc. and 15 Ph.D. students in 2011. Of the BSCH Major Chemistry (Arts & Science) students, Leanne Chen, Michael Dalziel, Adam Gribble, Kyle Hall, Joseph Kung and Alexander Love all graduated "with Distinction". In addition, the Department Medal and Society of Chemical Industry Student Merit Award went to Kyle Hall while Leanne Chen received the Walter MacFarlane Smith Prize for CHEM 497. Of the Engineering Chemistry students, Eric Kowal won the L.A. Munro Award in Engineering Chemistry, Mike Schmidt the Caroline F. Small Award for Design Innovation, Anjuli Szawiola the M. Sullivan and Son Limited Scholarship and Jocelyn Zuliani the Society of Chemical Industry Student Merit Award and the Dr. Wallace Graham Beck Memorial Prize in Engineering Chemistry.

New graduate student recruiting procedures put in place over the winter have resulted in a significant increase in the number of new applicants for our masters and doctoral programs, boding well for our future. Check out our new departmental Facebook page (<http://www.facebook.com/QueensChemistry>). It's aimed primarily on research opportunities within the department, but it will also give you greater insight into the department.

All in all, faculty, graduate students and undergraduate students continue to thrive. Listed separately is a chronological survey of major events in the department over the past

twelve months. Quite notable is the extensive list of awards to both faculty and students, major achievements which justify our optimism that we shall retain and even improve on the level of quality in teaching and research which has become the hallmark of this department.



The undoubted highlight of 2012 will be the arrival of **Professor P. Andrew (Andy) Evans** as **Bader Chair in Organic Chemistry**. Andy succeeds Victor Snieckus in this highly important and honoured

position and, as is shown below, Queen's Chemistry has once again recruited a magnificent talent to the Bader Chair.

Born June 20, 1964, in Llangollen, Wales, Andy obtained his B.Sc. (Hons.) in 1987 at Newcastle Polytechnic and his Ph.D. in 1990 at the University of Cambridge under the guidance of Andrew B. Holmes, FRS. Andy moved on to a NATO Postdoctoral Fellowship at the University of Texas at Austin (1991-1993; Philip D. Magnus, FRS), and then joined the Department of Chemistry of the University of Delaware where he was Assistant Professor 1993-1999, Associate Professor 1999-2000 and Professor in 2000. He moved to Indiana University where he was Professor 2001-2006, and then back to the UK where he assumed the position of Professor of Chemistry and Heath Harrison Chair of Organic Chemistry at the University of Liverpool. The Heath Harrison Chair is one of the most prestigious chairs in the UK and has been held by a number of extremely prominent organic chemists, but Andy gave it up to assume the Bader Chair at Queen's this year.

Andy has won numerous awards and has been extremely active in the community. For example, he was awarded an NIH First Award (1997); Zeneca Pharmaceuticals Excellence in Chemistry Award (1997); Francis Alison Outstanding Young Scholar Award (1997); Eli Lilly Grantee Award (1998); Camille Dreyfus Teacher-Scholar Award (1998); GlaxoWellcome Chemistry Scholar Award (1999); Novartis Pharmaceuticals Academic Achievement Award (2000); Pfizer Distinguished Michigan Lecturer (2000); French Chemical Society Organic Division SFC-Rhodla Lecturer (2000); Johnson and Johnson Focused Giving Award (2001); Pfizer Creativity in Organic Chemistry Award (2002); Board of

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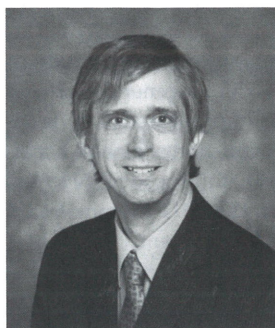
Message from the Head continued

Consulting Editors, Tetrahedron and Tetrahedron Letters (2003-Present); ACS Division of Organic Chemistry Member-at-Large (2003-2005); US Associate Editor, Chemical Communications (2005-2007); National Organic Symposium Executive Officer (2005-2007); Royal Society Wolfson Research Merit Award (2006-11); Letters in Organic Chemistry Editorial Advisory Board (2006-Present); NIH Study Section Member (2006-2008); Novartis Chemistry Lectureship (2007); Chem. Comm. Editorial Board (2008-2010); RSC Pedler Award (2009); Synlett and Synthesis Editorial Board (2009-2010); ACS Division of Organic Chemistry Chair (2010); ACS Fellow (2011); Associate Editor for Synthesis (2010-Present); ACS-DOC Councilor (2012-Present).

Andy's research interests are primarily focused on the exploration and development of new metal-catalyzed reactions and their application to the total synthesis of complex bioactive natural products. He has published more than 100 papers, articles, reviews and monographs. He has also presented over 450 plenary and invited lectures at international conferences, symposia, universities, research institutes and companies.

Andy moves to Kingston with his family and several members of his research group this summer, and should be installed in his labs on the 5th floor of Chernoff Hall by the time you receive this issue of *QChem Chronicles*.

Saving Water and Energy: Current Research in the Jessop Group



In a truck, most of the energy content of diesel fuel is wasted. When the fuel is burned in the engine, the wasted energy merely makes the engine block and the exhaust gases hot. Why can't some of that waste energy be collected and used? A major collaborative project between the Jessop group (Chemistry), Prof. Brant Peppley (Chemical Engineering) and Prof. Boyd Davis (Mining Engineering) involves working on just that problem. They are developing a thermally-regenerative fuel cell (a TRFC) that converts some of the waste heat into electricity. Unlike a typical fuel cell, a TRFC doesn't require any hydrogen to be stored; instead, it uses the engine's waste heat as an energy source. Onboard a truck, that extra electricity could be used to power air conditioning, lights and cooling

systems, or to recharge batteries. This multi-group project started about four years ago. Chemistry graduate students Andrew Carrier and Darrell Dean (both finished their PhD's this past year), Vanessa Little, and Mark Skerritt and postdoctoral fellow Dr. K. Huynh have developed the chemistry in different parts of the system. Along with a new postdoctoral fellow Dr. N. Choudhury, they are working towards the day they can put everything together to build the first working prototype. That will be a day worth celebrating!

Speaking of celebrations, Jessop group member Sean Mercer has been awarded the Hancock Award for Green Chemistry by the American Chemical Society (ACS) and the National Institute of Standards and Technology (NIST) in June of this year, for his discovery of "switchable water." The award was presented in a ceremony at the Environmental Protection Agency in Washington, DC. "Switchable water" is an aqueous solution that can be easily switched from salty (high ionic strength) to non-salty (low ionic strength) and back again. This technology, as simple as it sounds, has many potential applications including the desalination of seawater or brackish water, recovering fresh water from industrial wastewater, separating organic chemicals out of water, and settling fine clay particles out of water. Mercer and postdoctoral fellows Dr. T. Robert and Dr. R. Dykeman have been exploring the possibilities, while GreenCentre Canada is actively pursuing the commercialization of the technology.



Message from the Department Manager

BY JOHANN JARDINE

Over the past 12 months the department has seen the completion of two major ongoing projects.

On the renovation side, Chernoff Hall continued preparations for the arrival of Dr. Andy Evans, our new Bader Chair. The focus moved to Lab 339 and completing renovations for Dr. Stan Brown, our goal being to duplicate all building services, cabinets, benches, venting and fume hoods to replicate Dr. Brown's lab on the 5th floor of Chernoff Hall. Five new fume hoods were installed as part of this renovation. The department has consciously reused benches and cabinets to complete this renovation in the most cost efficient manner. The final stage of the renovations involved the addition of two new fume hoods in Dr. Evan's instrument room on the 5th floor of Chernoff and resurfacing in both the labs and instrument rooms. Looking back over the past cou-

ple of years, we have completed four lab renovations to prepare for the arrival of the new Bader Chair.

The final phase of the three-year QUASR Project was completed this year. The QUASR Project replaces the decades old mainframe system used by Finance, Student and Human Resources systems. The transition to the new Human Resources administration system began February 17, 2012 with the creation of new modules for Core, Benefits, Payroll, Time and Labour. Existing processes have been streamlined by enabling decentralized self service access to update human resources information by departments. The new system offers improved payroll processing efficiencies with fewer adjustments and enhanced benefits tracking capabilities, and provides self service inquiry for staff and faculty. The University now has one common system for all time and attendance tracking with consistent processing and reporting.

Robert Dumont, Operational Assistant in Stores, moved to a position with Green Centre Canada as a laboratory technician, and Kim Mackinder joined the Chemistry department as the Operational Assistant for the Science Stores operation following Rob's departure. Kim joins the department following 20 years with the Physics Department as a Cryogenics Technician. Kim was directly involved in the Physics and Chemistry stores amalgamation that took place in 2009, and her background and understanding of our stores operation has been of great benefit to the department.

In closing, the past year could be referred to as a year of completion with both the QUASR project and the Bader Renovations now completed. I look forward to the coming year with the appointment of our new department head and changes to the University's current budget model.

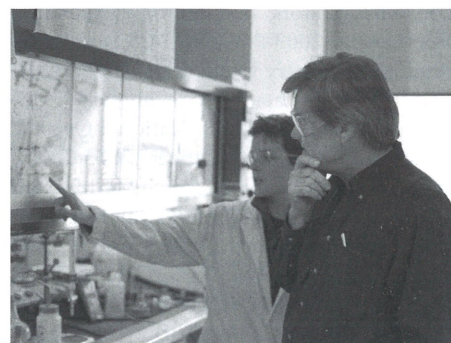
Victor Snieckus, Snieckus Innovations

Victor Snieckus, Emeritus Bader Chair of Organic Chemistry, continues to be active in fundamental research in synthetic organic chemistry and, in a new initiative, is directing the second year of Snieckus Innovations (SI). SI is a unit, within Queen's University, which undertakes synthesis of molecules for the drug discovery/development programs of the pharmaceutical and agrochemical industries. In the past year, the Snieckus group has discovered strategies and technologies which provide new ways for constructing anti-tumor and anti-inflammatory type molecules. Based on past success in his group (e.g. the Snieckus reactions are being used for the commercial production of anti-AIDS and anti-hypertensive drugs by Bristol-Myers Squibb), this new research has similar potential for application in the pharmaceutical industry.

In addition to this work, which has been published in *Angewandte Chemie*, the highest Impact Factor journal in organic chemistry, Victor and his students have contributed a review to *Angewandte* on the history of the chemistry for which the 2010 Nobel Prize was awarded. This is a most fitting contribution from Queen's Department of Chemistry since Richard Heck, one of the Nobel laureates, carried out research in the Snieckus laboratories

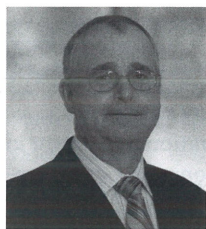
in 2006. For his contributions, Victor has been awarded Queen's highest honour, the 2011 Prize for Excellence in Research. He is cited for research which demonstrates the ability to transmit a discovery into a general synthetic concept and to insightfully demonstrate its application for the construction of bioactive molecules and complex natural products. He was also the recipient of the 2011 Alumni Award from the Chemistry Department, University of Alberta for his research achievements.

At Snieckus Innovations (SI), located in the Novelis Industrial Park (IP) 3.5 km from Queen's, work in a new eight-hood laboratory is advancing rapidly in the provision of molecules to pharmaceutical and biotech companies for support of their medician agent development programs. With gracious support from Dr. Alfred Bader, well recognized for his philanthropy to Queen's, his alma mater, SI has evolved as a self-sustained laboratory with infrastructure provision by the Chemistry Department and the Green Center, also located at IP. In the past year, the SI group has expanded to six researchers and has been awarded two NSERC ENGAGE grants to solve projects of immediate interest to one global pharmaceutical company and to an agrochemical company. One NSERC Industrial Post-



doctoral Fellowship has been awarded for work with another pharmaceutical company and, with the assistance of several grants, work is ongoing to provide new lead synthetic chemistry in collaboration with this company. On a daily basis, SI chemists are also engaged in custom synthesis of molecules which require high purity and rapid turn-around time to be competitive with other custom synthesis organizations in North America, China, and India. Thus excellent progress is being made at SI, highlighting the momentum of Queen's commitment to develop and nurture close academia-industrial partnership for the benefit of the University.

Gregory Jerkiewicz and Electrochemical catalysis



The group of Prof. Gregory Jerkiewicz pursues a broad range of research activities that include interfacial electrochemistry, electrochemical thermodynamics, corrosion science and development of new electrochemical and electroanalytical techniques.

One of the main projects involves research on platinum electrochemistry and electrocatalysis. Although it had been known for over 50 years that platinum forms the best electrocatalysts for many electrochemical reactions, including the hydrogen oxidation reaction (HOR) occurring in fuel cells, it was unclear what made this metal so special. To unravel the origin of this exceptionally high electrocatalytic activity, Gregory has pursued research that employed electrochemical, thermodynamic and electroanalytical techniques. The challenging project requires measuring tiny mass changes, on the order of nanograms, and examining heat evolution in the micro-joule range while concurrently per-

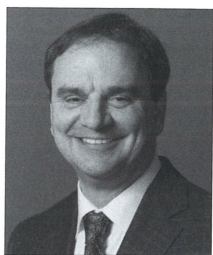
forming electrochemical measurements. The knowledge that his group generated sheds new light on the electrochemical behaviour of platinum because it was determined for the first time that platinum exhibits hydrophobic-like properties during electrochemical reactions involving hydrogen. The interfacial hydrophobicity of platinum gives rise to low activation energies for reactions involving hydrogen, thus resulting in high reaction rates.

Another research effort deals with the formation of monolayer oxides (less than 1 nanometer in thickness) on platinum electrode materials such as platinum nanoparticles. Platinum nanoparticles are at the heart of polymer electrolyte membrane fuel cells because they form the sites at which electrochemical reactions take place. Platinum nanoparticles make up ca. 30-35% of the entire cost of a fuel cell stack. The oxygen reduction reaction occurs simultaneously with HOR in fuel cells, and these two processes generate electrical and thermal energies. However, platinum nanoparticles gradually degrade through a process that involves monolayer surface oxides. This research, conducted in

collaboration with Prof. Diane Beauchemin (also at Queen's), focuses on the quantification of electro-dissolved platinum and on the development of operating conditions and procedures that mitigate platinum degradation, thus extending the lifetime of fuel cells.

A third noteworthy contribution involves the development of a novel electrochemical approach to the formation of brightly coloured surface layers on titanium and zirconium. Interestingly, the method developed and optimized by Gregory's group generates ca. 80 differently coloured layers. Several years ago, they discovered that the colouration of passive layers on titanium can be switched reversibly, resulting in the very first multi-color switching electrochemical system. This work was featured on the cover of *Langmuir*. Gregory's most recent contribution deals with the application of polymer clearcoats to the coloured passive layer on titanium and zirconium that brings the outcome of the project to such a maturity level that at the present time it is a scale-up ready technology.

Queen's Chemistry Innovation Council (QCIC)



The Queen's Chemistry Innovation Council Annual Meeting was held in October, and the Welcoming Dinner featured Dr. Tom Harris, Vice-Principal (Advancement), as guest speaker. Tom

made an inspiring presentation in which he gave insight into the imminent financial campaign to an audience which included QCIC members from as far away as British Columbia and California, and several administrators (deans, the V-P Research and the Deputy Provost) from as far away as Richardson Hall.

The QCIC was created about a dozen years ago as the first departmental advisory body at Queen's, and is composed of over thirty upper level representatives (presidents, VPs, senior managers, etc.) from the chemical and biotech industries including Alphora, BASF, Merck Research Labs, Bristol Meyers Squibb, Fisher Scientific, Gamble Technologies, Lanxess, Davos Chemicals, Ridout & Maybee

LLP, and IFF. There is also representation from government agencies such as the National Research Council. All members have a strong interest in Queen's and are committed to advising the Chemistry Department and to assisting in finding new opportunities for funding and partnerships.

The Council meets at Queen's annually in the fall to receive updates on departmental activities and to develop strategies to ensure the long-term sustainability of the department and its research and teaching infrastructure. Thus Council members have been instrumental in raising funds for research and for the upgrading of our undergraduate laboratory instrumentation. They have also participated in the creation of new graduate courses and have created summer internships for our undergraduate students. The advice they have provided over the years has thus enabled the department to stay in tune with the demands of the industrial job market, and Council members have oft provided unique and highly fruitful perspectives in addressing the challenges we face as a department.

4th Year Research Project Presentations

On April 9, students in Engineering Chemistry (Applied Science) and Honours Chemistry (Arts and Science) presented the results of their 4th year research projects; 60 students in total gave oral presentations during this day-long minisymposium. The Sullivan Prize and Smith Prize competitions were given recognizing outstanding achievements in undergraduate research in Applied Science (ENCH 417) and Arts and Science (CHEM 497), respectively, and were adjudicated by Emeritus Faculty members of the Department of Chemistry, Professors Ken Russell, Walter Szarek and Gary vanLoon. The Sullivan Prize competition featured presenta-

tions by Jackson Dakin, Erica Kowal, Benjamin Leviton, Elizabeth Melito, Anjuli Szawiola, John Vandersleen and Jacqueline Green, with Anjuli Szawiola taking the prize for her project on "Discovery of new bioactive molecules produced by *Streptomyces calvus*", which was supervised by Prof. David Zechel. The Smith Prize competition featured presentations by Nausheen Sadiq, Aurora Antoft-Finch, Michael Dalziel, Leanne Chen, Adam Gribble, and Kyle Hall, with Leanne Chen taking the prize for her project on "Synthetic and theoretical investigations of organoboron photochromic systems", which was supervised by Prof. Suning Wang.



Ken Russell, Simon Hesp (organizer), Leanne Chen, Walter Szarek, Gary vanLoon



Ken Russell, Anjuli Szawiola, Walter Szarek, Simon Hesp (organizer), Gary vanLoon

2011-2012 DEPARTMENTAL HIGHLIGHTS

December 2011

The annual Holiday Potluck is held Dec. 15 in the 4th Floor lounge.

Industry investors and venture capitalists invest \$3.2 million in Switchable Solutions Inc. The technology that formed the basis of this company was discovered by Philip Jessop.

January 2012

Zac Hudson (Wang group) wins the 2012 Chemical Institute of Canada (CIC) Inorganic Division Award for Graduate Work in Inorganic Chemistry. He gave an Award lecture at the 2012 CSC conference in Calgary.

The Department of Chemistry at Queen's maintains its top 5 ranking among Canadian chemistry departments in the 2011 QS World University Rankings in Chemistry.

February 2012

Suning Wang is among seven outstanding Canadian researchers to be awarded a Killam Research Fellowship, administered by the Canada Council for the Arts. The Fellowship provides \$70,000 a year for two years to each of the researchers.

March 2012

The Chemistry Banquet is held March 24.

GreenCentre Canada and Switchable Solutions are awarded \$5.48 million to bring 'game changing' green solvent technology to market. The technology that formed the basis of this company was discovered by Philip Jessop.

Leanne Chen, a 4th year Chemistry Undergraduate student supervised by Professor Suning Wang and Professor Nick Mosey wins the best oral presentation award at The Southern Ontario Undergraduate Student Chemistry.

On March 26, a crew from the HiFi HD cable channel films on the 4th floor of Chernoff Hall. Paul Langlois from the Tragically Hip plays his own electric guitars and Prof. Peter Look's Photonic Guitar.

Julia van Druenen (Jerkiewicz group) is awarded the Herbert H. Uhlig Award. The Award, established in 2007, is one of only five summer fellowships given by the Electrochemical Society to Ph.D. candidates across the world to support exceptional research in the field of electrochemistry.

Congratulations to Nick Mosey on the arrival of his son, Ryker Scott Mosey, born March 29.

April 2012

Congratulations to Yingli Rao (Wang group) for winning a prestigious 2012 Vanier Canada Graduate Scholarship.

The Oleschuk Group research is featured as a cover article in the RSC Journal of Materials Chemistry. Yueqiao Fu, Graham Gibson and Richard Oleschuk have developed an approach for the fabrication of polymer microstructures with high aspect ratio and low polydispersity using photonic fibres as templates.

Bill Newstead is the recipient of the Engineering and Applied Science First Year Instructor Teaching Award 2012 winter term.

The following students win national NSERC awards for 2012-2013: Leanne Chen (CGSM), Kyle Hall (CGSM), Jessamyn Little (CGSM), and Eric Keske (PGSD3).

Ontario Graduate Scholarship recipients for 2012-2013 are Adrian Bailey, and Jiasheng Lu.

May 2012

Graduate students from the Chemistry Department participate in Science Rendezvous, a science event for the public of all ages, in Grant Hall on May 12.

The department holds a reception May 27 at the 2012 Canadian Society for Chemistry Conference in Calgary, Alberta.

The Chemical Institute of Canada selects Dr. Philip Jessop as the 2012 winner of the Canadian Green Chemistry & Engineering Award.

Dr. Guojun Liu's research on cotton coating is highlighted in the ACS Chemical & Engineering News.

Congratulations to the class of 2012

(shown are mostly Honours Chemists, with some Eng Chemists who were present during the awards ceremony)



Saying Goodbye



Saul Wolfe, FCIC

Professor of Organic Chemistry at Queen's from 1961 to 1990, died Aug. 9, 2011 in Vancouver at the age of 78.

Saul was born in Toronto on July 2, 1933. He received his undergraduate education at the University of Toronto and graduated as the first Ph.D. student of the University of Ottawa in 1957, having worked with the legendary R.U. Lemieux. After postdoctoral work at the Weizmann Institute of Sciences, Israel, and work as a senior research scientist at Bristol Laboratories in Syracuse, NY, Saul joined the department of chemistry at Queen's University as an assistant professor in 1961. In 1990, he moved to Simon Fraser University as professor, and became Professor Emeritus in 1997.

Saul's impact on chemistry was profound and widespread. He championed understanding of the structure, synthesis and biosynthesis of the unstable beta-lactam ring system central to the action of penicillin and related antibiotics. More than 90 papers and 40 patents on the topic established him as a world authority. Saul's studies of the biosynthetic pathways led to some exciting scientific debate internationally. Even more important on a fundamental level was his enthusiastic and often controversial insistence that quantum electronic structure methods, supported by cleverly designed experiments, should be the basis of teaching and understanding reaction structure and mechanism. From the beginning, he recognized the importance of computers and the "new" *ab initio* electronic structure methods and applied them to conformational and stereochemical analysis when these ideas were in their infancy. He contributed much of what we know and teach about some of the most fundamental chemical reactions, most notably, the S_N2 reaction mechanism, addition to carbonyl groups and reactive intermedi-

ates. An early proponent of the idea that electron distributions drive conformations and reactivity, his ideas evolved from lone-pair – lone-pair to frontier orbital and other concepts of qualitative and quantitative perturbational MO theories that constitute the modern way of thinking of chemistry. Saul was the first to elaborate the Gauche Effect and provided keen insight into the origin of the Edward-Lemieux (Anomeric) Effect and the Perlin Effect. He promoted the idea that the archaic concept of hybridization be expunged from chemical curricula.

Saul made an outstanding contribution to the science of chemistry through his inspirational teaching, timely and eclectic research interests and dedicated efforts to the advancement of medicine through applications of chemistry. His career spanned almost five decades in one of the most exciting times in the history of chemistry; more than 250 papers, 44 patents and 86 postdoctoral fellows and students contributed much to that excitement. He also had a great sense of humour, and enjoyed opera.

Saul received numerous honours. He was a Canada Council Kilham Research Fellow, a Fellow of the Royal Society of Canada and a recipient of the first R.U. Lemieux Award of the Canadian Society for Chemistry. Saul served as chairman of the International Symposium on Stereochemistry, in 1976 at Queen's, a member of the NSERC grant selection committee and was on the editorial advisory board of the Canadian Journal of Chemistry.

He is survived by his wife, Toby, daughter Lesley (Brian Kenney), son Isaac (Lauren Wolfe), grandson Jayden Wolfe and granddaughter Michayla Wolfe.

1960's Chemistry Scholarship Winner



Jessamyn Little and Mike Baird

McAdie Award Winner



Mike Baird, Harry McAdie and Gurpaul Kochhar

Seminar Series 2012-2013

We are pleased to announce that the following speakers have been confirmed for our 2012-2013 Seminar Series.

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

Prof. Cassandra Fraser,
University of Virginia, U.S.A.

Prof. Frank Raushel
Texas A&M University, U.S.A.

Prof. Alex Adronov
McMaster University

Prof. Robert Morris
University of Toronto

Prof. Robert Schurko
University of Windsor

Prof. Peter Tieleman
University of Calgary

Prof. Byron Gates
Simon Fraser University

Prof. Pierre Kennepohl
The University of British Columbia

Prof. J. Scott McIndoe
University of Victoria

Prof. David Milstein
Weizmann Institute of Science, Israel

Prof. Milton Lee
Brigham Young University, U.S.A.

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

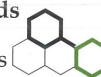
Carrie Miles
Current giving
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613-533-6000 ext. 75501

Lisa Sykes
Current giving
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Faye Ransom
Legacy giving
faye.ransom@queensu.ca
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Please know that any communication about giving and estate planning will be held in the strictest of confidence.

Friends
of
Queens
Chemistry



Networking Queen's Chemists of all years

We have received suggestions that it would be useful if Queen's chemistry grads could more easily keep in touch with each other and with their former profs and TAs. To this end, we have established a Queen's University Chemistry LinkedIn group network.

As you may know, LinkedIn is essentially a social network, much like Facebook but of a much more professional nature. LinkedIn can be used solely for communication, but it is also widely used, for instance, to build up contact networks between like individuals, to gain introductions, and to search for employment and potential employees. The

number of members is low at present, but all alumni/ae are being invited to join as will all graduating classes in the future.

We believe that the Queen's Chemistry Department LinkedIn group will grow and will help all to stay in touch with their classmates while at the same time generating new connections to those who represent tomorrow's leaders and who will be great additions to your teams whatever you do. To join, go to: http://www.linkedin.com/groups?gid=4130753&goback=%2Eanp_4130753_1336419431099_1.

A Request for Help

Our gallery of graduating class photos is missing the classes of 1960, 1962-65, 1968, 1969, and 1976 because of water damage in Frost Wing. If you have a copy of any of these and are willing to loan it to be scanned, please contact us at adm@chem.queensu.ca.

Many thanks.

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 annually. Awards for the 2010-11 academic year were presented at the TA training day on September 6, 2011:



David Thomas
Teaching Assistant Award
Brendan MacGillivray



Department of Chemistry TA Award for Excellence in Teaching
Eric Keske



Fisher Scientific Teaching Assistant Award
Stephen Walker



Agilent Technologies Excellence in Teaching Assistant Award for 3rd Year Chemistry Laboratory
Shelley McArthur



William Patrick Doolan Prize in Chemistry
Julian Kwok



Din Lal Teaching Assistant Award
Gurpaul Kochhar

Graduate Chemistry Society

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

John Saunders, President

Tamara de Winter, VP Internal Affairs

Michael MacLean, VP Finance

Ningsi Mei, VP External Affairs

Gillian Mackey, 3rd Floor Rep

Weijie Jiang, 4th Floor Rep

Kyle Boniface, 5th Floor Rep



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