

INTERFACES

CHEMICAL ENGINEERING AND APPLIED CHEMISTRY, UNIVERSITY OF TORONTO



Our Chemical World

How chemical engineering
is saving the environment

Volume 6, Number 1 Spring 2009

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“We do not inherit the earth from our ancestors, we borrow it from our children.”

– *Native American Proverb*

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If it was ever true that universities are ivory towers that stand apart from society, it certainly couldn't be said today. This is especially true of engineering which, by its very nature, seeks to address pressing problems in our society and industry through applied science. There are perhaps no bigger challenges we face currently than those that threaten our environment. While these threats may result from a failure to appreciate the long-term impacts of industry and technology, innovative engineering can harness new technologies and renew industry to provide sustainable solutions.

Within our Department, our students and faculty are acutely aware of the challenges facing our environment. With the leadership and creativity characteristic of chemical engineers, they are seeking to find new solutions and propose alternatives.

In this issue of *INTERFACES*, we profile a few who are leading the charge in aid of nature. They seek to improve the quality of our land, air and water, while advocating for better personal and industrial practices.

Beginning with this issue, *INTERFACES* is becoming an annual publication. Through an expanded profile in *Skulematters*, the Faculty's alumni magazine, and the monthly Alumni E-News bulletin, we have many other opportunities to communicate with our alumni than when we began this magazine in 2003. You can also take advantage of our newly designed website, where regular news about our Department and its alumni is posted—www.chem-eng.utoronto.ca. We encourage you to keep in contact with us. Send us news of your professional and personal accomplishments. And do keep your contact

information up to date by notifying us of any move. All it takes is a quick e-mail to external.chemeng@utoronto.ca to update our files.

Finally, I am pleased to inform you that *INTERFACES* was recognized with a 2008 Gold Hermes Creative Award, which is presented by the Association of Marketing and Communication Professionals. We appreciate this recognition and will continue to strive to produce a publication befitting the quality of our Department. In return, we ask for your participation, ideas and support.



DOUG REEVE

*Professor and Chair,
Department of Chemical Engineering
and Applied Chemistry*

New Chem Eng Students Big Boost to Volleyball Blues

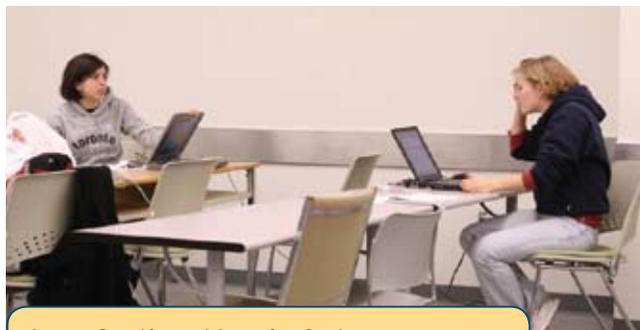
The University of Toronto Varsity Blues women's volleyball team—and Chemical Engineering—were joined in September by twin sisters **Katrina and Shannon Rossall** (Chem 1T2). Standing at six-feet, the Bishop Grandin high school standouts both played for the U18 Dinos women's volleyball club in their hometown of Calgary. The duo help fill a void for the Blues left by a key group of graduating players.

“They are a great fit for our program—they are great athletes and bright students who have a passion for volleyball and they come from a strong club and a very supportive family. They are extremely dedicated and motivated athletes who will add some height and help to strengthen our block and our middle positions. I am looking forward to working with them and seeing them develop over their career here at U of T,” said Blues head coach Kristine Drakich.

These young women continue the Chemical Engineering family tradition began by their grandfather **John “Jack” Rossall** (Chem 5T5).

Engineering Success

Four undergraduate students put their engineering skills to good use and in the process, won glory. **Liane Catalfo, A. Vik Pandit, Jennifer Sauks** and **Cody Wood**, all members of the Class of 2008 + PEY, placed first in the consulting engineering category at the U of T Engineering “Kompetition,” known as UTEK. The annual contest is run by the Engineering Society and is supported by the Engineering Alumni Association among others. In teams of four, students who are in third or fourth year, must solve an engineering problem presented that day in five hours and with limited materials. By winning, the team then moved on to the Ontario Engineering Competition, where



Liane Catalfo and Jennifer Sauks prepare at the Ontario Engineering Competition.

they placed second, and finally to the Canadian Engineering Competition, where they placed third.

At the 2009 UTEK competition, the defending champions placed second to another Chem team composed of **Shufrah Alam, William Garcia** and **Akarshi Mathur**, all of the class of 2010. A team of Chems also placed second in the innovative design category. The team included members of the class of 2009 **Siobhan Holladay, Osamah Saeed, Peter Skora** and **Elizabeth Wong**.

Pub Essay Wins Prize

Taryn Davis (Chem 1T0) won \$5,000 as part of the Firkin Group of Pubs' “Say F.U. to



Student Debt” essay contest. In her essay, Davis wrote, “To me this award signifies more than a debt break. It signifies a chance to get on the environmental career path I enjoy and have greater opportunity to repay my mother for all that she has provided me with growing up. It would be a Firkin dream come true!”

Chem Eng Student Runs Boston Marathon

Chemical Engineering student **Vanessa Bowker** (Chem 0T8) competed in the 112th Boston Marathon on April 21, 2008. Bowker completed the course, which is over 42km long, in 3:46:21. The marathon, which is one of the most heralded long distance runs in the world, began in Hopkington, Massachusetts and ended in downtown Boston, near historic Boston Common. Bowker had qualified

for Boston at the 2007 Scotiabank Toronto Waterfront Marathon. Also participating in the run was Bowker’s father, Blair. He finished in 4:00:50.

LOT Graduate Students

The LEADERS OF TOMORROW program, which began in 2002 in Chemical Engineering and expanded Faculty-wide in 2006, has added a chapter for engineering graduate students. The initiative has been led by two PhD candidates from Chem: **Maygan McGuire** and **Angela Tran**. Their aim is to create “a culture of leadership learning and practice that will result in socially and self-aware engineers capable of positive transformational change”.

In 2005, a group of Chemical Engineering graduate students interested in this topic began meeting under the leadership of **Zoe Coull** (PhD Candidate). Soon that group grew and began hosting a variety of seminars and workshops. McGuire and Tran say that expanding the group to include all engineering graduate students was simply “the next logical step.”

The kick-off for the new Faculty-wide program began with a barbecue in June 2008. That was followed by the formation of a working group that has been organizing a busy schedule of events. Their seminars have included topics like “The Business of Likeability” and “Leadership is a Choice.” They attract an average of 80 to 100 attendees per seminar. A further 40 participants attended a series of day-long workshops held over three days.

While unique in Canada, the two admit that, “our greatest challenge has been in communicating the value of the work we do to faculty as well as our peers.” This serves to strengthen their resolve. “This further highlights the need to infuse leadership-related language and principles to engineering education,” say McGuire and Tran.



Ushalini Pathmasenan and Vanessa Bowker

The Success of Successful Failing

Most people try to avoid failing. **Gina Mollicone-Long** (Chem 9T3) embraces it and advises others to do the same in her best-selling book *The Secret of Successful Failing*. One of those secrets is familiar to chemical engineers: the feedback loop of life.



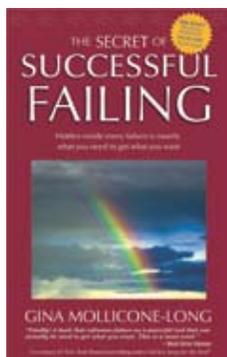
“Failure,” Mollicone-Long writes, “is simply feedback.” The key is to understand “when it is okay to adjust our actions and when we must adjust our energy to get what we want.”

Mollicone-Long can draw upon not only her Chemical Engineering education, but also her diverse career. After graduating, she was responsible for brand management at Proctor & Gamble and then Molson Breweries. She then undertook a senior strategic role with the NRG group, a high tech venture capital firm.

In 2000, with her husband Andrew Long, she co-founded two multi-national companies: Critical Pathfinders Adventure Training and Scavenger Hunt Anywhere. Both companies focus on corporate team building and training. Their Fortune 500 clients include The Body Shop, Microsoft and KPMG among others. She also runs Goddess Concepts, which offers training and workshops to empower women.

“My intention in writing this book is to make a positive contribution to others by sharing my story and what I have learned,” explains the mother of two.

“I still can’t believe that I have written a self-help book using the education I gained while studying Chemical Engineering. It is a great illustration of ‘trusting the process’ even though I couldn’t really see the whole picture. I had no idea how



important feedback loops would be when I wrote my thesis back in 1993. Thank Heavens I was paying attention in class and that I maintained connections to U of T so I could go back and clarify things I had forgotten,” writes Mollicone-Long in her preface.

The self-help book was named a best seller on October 16, 2007 and Mollicone-Long has been touring North America offering talks and seminars based on the lessons provided in her book.

You can learn more about the book and read Mollicone-Long’s blog at www.ginaml.com

Class of 5T9 Endows Award

In advance of their 50th reunion, the Class of 1959 has successfully raised \$125,000 to endow the Class of 5T9 Leaders of Tomorrow Award. The award of \$5,000 is presented annually to a third year student who has demonstrated the potential to become an outstanding leader. The award was first established in 2005 and has been presented to **Karina Lorenzo** (Chem 0T6), **Stephanie McTague** (Chem 0T7), **Liane Catalfo** (Chem 0T8 + PEY), and **Peter Maka** (Chem 0T9 + PEY). As a result of the Class of 5T9’s endowment, the award will now continue in perpetuity.



(L to R) David Colcleugh, Bruce Millar, Liane Catalfo, Souit “Sid” Olvet, Alec Monro, and John Mathews.



(L to R) John Mathews, Peter Maka, and Souit "Sid" Olvet.

Class President **Alec Monro** sees this gift as an investment in the future through people. "It is a fitting legacy for our class. It is our payback for the gift of an education in an outstanding, forward-looking institution," says Monro. The effort was also led by classmates **Dennis Caplice, David Colcleugh, Souit "Sid" Olvet, Walter Petryschuk, and Kim Shikaze**. The 2009 award will be presented at the 24th Annual Chemical Engineering Dinner on Friday March 27, 2009.

Q&A with Elias Kyriacou

Since graduating from the Department in 1976 with a BAsC, **Elias Kyriacou** has held a number of engineering and operations positions in Ontario's chemical industry. He is presently working as an Auditor in the Nuclear Waste Management Division of Ontario Power Generation. In the fall 2008, Elias joined the Board of Directors of the Engineering Alumni Association (EAA) where he joins fellow Chem grad **Claire Kennedy** (Chem 8T9), who serves as Vice President. INTERFACES spoke to him about why he's an active Skule™ volunteer.



INTERFACES: Why did you decide to join the Board of the EAA?

ELIAS KYRIACOU: I believe that volunteer work is very important. I have been involved with the education system and also with mentoring engineering students and young engineers for a number of years. A little while ago I attended a memorial for one of my Chemical Engineering professors. During that event a lot of memories from my undergraduate days came back to me and I realized how much I benefited from having the opportunity to be educated at the Engineering Faculty at the University of Toronto. I decided that I wanted to get more involved with the Faculty and help the Faculty and the students in a small way. I started participating in some events and when the call came for a position on the EAA, I decided to throw my name in the hat and here I am.

INTERFACES: What are the most pressing goals of the EAA?

ELIAS KYRIACOU: Although there are a number of issues that are in front of the EAA, in order to be effective with the resources available, the Executive has looked both at the present and future and decided to address the following as the most pressing goals:

- To build stronger bonds and relationships between alumni and the Faculty, and also among the alumni themselves both professionally and socially;
- To promote and build stronger relationships between alumni and the future alumni, the undergraduates of the Faculty;
- To promote the interests of the Faculty and the University of Toronto both nation wide and world wide.

Each member of the EAA executive has a portfolio that they are working on and in conjunction with the Office of Alumni Relations, the Dean's Office and the alumni at large, we are confident that we are going to meet these goals.

Claiming Killams

University Professor **Michael Sefton** (Chem 7T1) was awarded the prestigious Killam Prize for Engineering in recognition of his outstanding career achievements in tissue engineering. The Killam Prize is Canada's most distinguished award given by the Canada Council for the Arts and is valued at \$100,000. Sefton is cross-appointed to the Institute of Biomaterials and Biomedical Engineering (IBBME). He is a world renowned pioneer in tissue engineering and an international leader in biomaterials, biomedical engineering and regenerative medicine.



Chemical Engineering Professors **Elizabeth Edwards** and **Molly Shoichet** were recipients of the Killam Research Fellowship for 2008–2010. Also awarded by the Canada Council for the Arts, the fellowships provide \$70,000 a year for two years to allow faculty to focus on their research. Edwards and Shoichet were two of ten selected nationally from 97 nominees.



Edwards' research focuses upon mixed microbial cultures that degrade benzene and other pollutants. Shoichet's research has investigated ways of regenerating damaged nerves in the spinal cord and is looking at designing a nerve regeneration system. They are the first engineering professors at U of T to be recognized with this award since 1981.



The three were recognized at a reception and dinner hosted by the Department on Monday September 12, 2008 at the U of T Faculty Club.

Honourary Doctorate Recognizes Chem Eng Professor

Professor Emeritus **Donald Mackay** was presented with an Honourary Doctorate from the University of Toronto at the June 17, 2008 convocation for Chemical Engineering undergraduate students. This, the highest honour bestowed by U of T, was in recognition of his groundbreaking research on the behaviour of chemicals in the environment.

Mackay was born in Glasgow, Scotland, in 1936 and graduated with a PhD in chemical engineering from the Royal College of Science and Technology and the University of Glasgow in 1961. He worked for some years in the petrochemical industry before joining the University of Toronto in 1967 as an assistant professor.

During his lifetime of research, Mackay has developed internationally recognized models that demonstrate the impact of oil spills, particularly in cold climates, and a ground-breaking system to predict how chemicals behave in the environment. These "Mackay models" are used to help to guide regulatory and environmental policy decisions worldwide.

Mackay has authored more than 600 publications and won a total of 22 awards during his career. In addition to the new Chem Eng



The Department's faculty and staff surround Donald Mackay (centre in scarlet robe) prior to convocation.

alumni in the audience, he was joined by the faculty and staff of the Department to celebrate this recognition.

Faculty Win Teaching Awards

Professor **Yu-Ling Cheng** was one of four recipients of the 2008 U of T President's Teaching Award and accompanying membership in the U of T Teaching Academy. She is also the recipient of the 2007 U of T Faculty Award and the Ontario Ministry of Education's inaugural Leadership in Faculty Teaching (LIFT) Award.

Paul Jowlbar, a senior lecturer and laboratory supervisor, has been named the 2008 Wighton Fellow by the Sandford Fleming Foundation and the National Council of Deans of Engineering and Applied Sciences. Awarded annually, the fellowship is given in recognition of innovative, distinctive and exceptional instruction in relation to undergraduate engineering laboratory courses.

Faculty Elected AAAS Fellows

Professors **Grant Allen** (Chem 8T1, MASc 8T3), **Chris Yip** (Chem 8T8) and Professor Emerita **M. Jane Phillips** (Chem 5T3) have been elected to the American Association for the Advancement of Science (AAAS), the world's largest general science society and publisher of the prestigious journal *Science*. They were formally honoured February 14, 2009 at the Association's annual meeting in Chicago.

Q&A with Alison McGuigan

Professor **Alison McGuigan** (PhD 2005) will return to the Department as an Assistant Professor this April. After completing her doctorate under



the supervision of University Professor **Michael Sefton**, McGuigan has completed Postdoctoral Fellowships at Harvard University and Stanford University. She spoke with INTERFACES about her research and coming home to U of T.

INTERFACES: Having been a student here, how does it feel to return to Chemical Engineering as a professor?

ALISON MCGUIGAN: It is pretty strange I have to say—but after 14 years in university it definitely feels great to have a “real job”. It has been amazing how welcoming the faculty and department support staff have been and I feel really excited and fortunate to be back.

INTERFACES: What is the focus of your research?

ALISON MCGUIGAN: A central theme of my research is cell organization and how to engineer the appropriate cell organization to create functional artificial tissues. My lab will attempt to recreate in a petri-dish processes that normally organize cells during tissue development in an embryo. By mimicking tissue development we hope to engineer tissues with the specific organization necessary for correct tissue function.

INTERFACES: What course would you most dread teaching?

ALISON MCGUIGAN: I did not really take many courses in Chem-Eng when I was a student here, so choosing one course I dread most is tricky—I would say however that any course being taught in WB116 will be a challenge since the room is so huge that the entire class can sit in the back row.

INTERFACES: Complete this sentence: Michael Sefton is a...

ALISON MCGUIGAN: Character!

Our Chemical World

How Chemical Engineering is saving the environment

Profiles by Dani Couture

Chemical engineers associated with the Department are striving to find lasting solutions for an environment in crisis. By conducting innovative research, offering new ideas and showing great determination, students, faculty and alumni are playing a leading role in saving the planet. INTERFACES introduces you to a few...

Greg Evans **Studying the air you breathe**

Aerosols play significant roles in both urban air pollution and climate change. However, their influence depends on their highly variable chemical composition; the relationship between their composition and impact remains poorly understood. Enter Professor Greg Evans (Chem 8T2, MASc 8T4, PhD 8T9) and his team at the Southern Ontario Centre for Atmospheric Aerosol Research (SOCAAR).

SOCAAR is a multidisciplinary research centre that was created in 2004. The Centre brings together medical personnel, atmospheric chemists, and environmental engineers, and provides them with state-of-the-art facilities to address the impact of urban particulates. Evans' team conducts research that uses advanced methods of chemical analysis to understand the



chemistry, origins, environmental influence, and health impact of atmospheric aerosols.

“SOCAAR’s goal is to make key connections between emissions of pollutants and the quality and composition of urban air and its impact on human health and the environment,” says Evans.

He directs SOCAAR with support from faculty in the Department of Chemistry, the Gage Occupational and Environmental Health Unit with the Faculty of Medicine, and Environment Canada. Together, they focus on the human side of air pollution, thereby contributing to the understanding of the science underlying poor air quality and climate change. This knowledge is then translated into policy development. SOCAAR’s research directly contributed to Environment Canada’s Smog Plan, and it supports the 2010 implementation of a new Canada-wide standard for exposure to fine particulate matter.

In 1997, Evans changed his field of research from the potential environmental impacts of nuclear-based electricity generation to atmospheric chemistry. This change of direction was motivated by his recognition of the impact of air pollution in Canada and the important role that related research could play in addressing the issue. “I believe that chemical engineers and chemical engineering students can play a central role in bettering the environment,” says Evans. “We need engineers who can effect positive change through technical innovation and leadership.”

John Lash **Hearing the call for climate change**

A business strategist and technologist, John Lash (Chem 8T6) heard the call for climate change and sustainability in 2007. With more than 20 years experience in high technology, communications, and media, Lash now promotes sustainability as an opportunity for businesses to drive the bottom line and increase brand value through environmental responsibility.



“Environmental sustainability and climate change are clearly the defining challenges of our generation,” comments Lash. Part mid-life crisis and part ambition to be at the forefront of what he believes will be the fastest growing sector in the next 50 years, Lash made the decision to spend the balance of his career pursuing something that gives back to the global community.

“My teenage children were delighted with my decision to pursue a career in sustainability,” says Lash. “On hearing the news, my daughter jumped up to exclaim, ‘Dad is going to save the world.’ That alone was worth it.”

In his role as Senior Director, Strategic Development at Clean Diesel, John Lash directs the marketing and strategy that provides sustainable solutions to companies to reduce regulated emissions from the combustion of fossil or biofuels, increase energy efficiency, and lower climate change impact of engine applications around the world.

Lash views sustainability as a fundamental philosophy and practice that can create financial value by means that promote positive environmental change. “Sustainability builds corporate social responsibility and environmental stewardship on the foundations of increasing bottom line results and brand value,” says Lash.

“To survive as a corporate philosophy, the new green must be green.”

According to this Chem Eng graduate, chemical engineers are ideally suited to make a big impact on sustainability. “Of all professions, we have the distinct advantage of being grounded in both chemistry and engineering... our engineering training prepares us to not just understand the problem at hand but to build tangible and practical solutions.”

You can read an article written by Lash about Black Carbon at <http://www.policyinnovations.org/ideas/innovations/data/000084>

Elizabeth Edwards **It’s the little things that count**

“A fascination with microbes and a desire to try to help society” is what drove Chemical Engineering Professor Elizabeth Edwards, a 2008 recipient of a prestigious Killam Research Fellowship, to become engaged in bioremediation research.



Bioremediation is any process that uses microorganisms, fungi, green plants, or their enzymes to return a natural environment altered by contaminants back to its original condition.

Groundwater contamination is a serious threat to global health. Nine million Canadians rely on groundwater for drinking. The need to find efficient and cost-effective ways to remediate contaminated sites has never been more pressing. If deployed scientifically, bioremediation can be a low-cost and effective remediation alternative that destroys contaminants instead of moving them from one medium to another.

In the past two and a half years Edwards’ research group has received international recognition. In 2007, two anaerobic contaminant-degrading mixed microbial

consortia from her lab were selected for metagenome sequencing by the U.S. Department of Energy Joint Genome Institute (DOE JGI).

Monoaromatic hydrocarbons are prevalent groundwater contaminants as they are found in most petroleum products. These compounds can be biodegraded both aerobically and anaerobically. However, anaerobic processes have significant advantages over aerobic processes for in situ bioremediation because anaerobic processes are not limited by the availability of oxygen.

Edwards and her team of graduate students conduct research that explores the biological processes that affect the fate of monoaromatic hydrocarbons in anaerobic environments and their potential role in site remediation. She believes that chemical engineering students have a unique blend of talents not found in other disciplines, “They have chemistry and a quantitative mind and approach. With chemistry, it is easy to learn biology. Being quantitative enables the prioritization of environmental issues on the basis of some rational arguments, which is badly needed.”

H. Alec B. Monro Saving Animals from Extinction

Wildlife Preservation Canada’s (WPC) mission is to save endangered animal species from extinction, specifically species whose numbers in the wild are so low that a great deal more than habitat protection is required for them to recover.

Currently, WPC’s principal focus is a program to save the wild population of Eastern Loggerhead Shrikes (a songbird that is also a bird of prey) in Ontario. This complex initiative was undertaken on behalf of Environment Canada and involves many



community organizations and scientists. So far, the program has succeeded in breeding approximately 150 fledglings and has received high praise from international conservation organizations.

H. Alec B. Monro (Chem 5T9) has been a Director and Trustee of WPC for over seven years and President for four years. WPC differs from most environmental organizations because its efforts require hands-on intervention. Monro says, “our scientists are literally in the field; they are collecting data, conducting research and making significant contributions to the science of species recovery in areas such as captive breeding, reintroduction, and habitat stewardship.”

The Chem Eng alumnus joined the WPC Board after retiring from the chemical industry. “There is no doubt that that my education as a chemical engineer and subsequent work in industry has helped me as President of WPC,” says Monro. “The capability to understand the complex elements of recovery biology and problem solving go right back to many of the courses I took in Chemical Engineering.” He also cites the leadership and communications skills he initially developed through the Chem Club and then further developed in industry as being an asset.

With a grounding in and understanding of many elements of technology, Monro believes that chemical engineers can and should endeavour to assess the balances between technical innovation and the risks to living species and the environment and volunteer their time to worthwhile organizations like WPC to make a difference. For more information about WPC, please visit www.wildlifepreservation.ca.

**Are you working to save
the environment? Tell us about it:
external.chemeng@utoronto.ca**

Charles Jia

The new green engineers

“Engineers are problem solvers,” says Chemical Engineering Professor Charles Jia. “As a result of chemical engineering training, we view things as interconnected systems. It is this holistic and systematic approach towards problems that puts chemical engineers in an advanced position to solve environmental problems.” Jia’s Green Technology Research Group is doing just that.



The Group develops novel technologies that help maximize the value of natural resources and minimize the environmental impact of industrial processes. They also develop new tools to improve the understanding of the behaviour and impact of pollutants in the natural environment.

“In the past few years, we’ve worked on a series of problems related to applied sulphur chemistry,” reports Jia. The foundation of his research program includes the properties of sulphurous acid as a leaching agent to selectively extract valuable metals from non-ferrous metal smelter slag and to reduce the leaching potential of metals in the slag.

In 2000, he initiated a study on the carbothermal reduction of SO_2 in oil sands fluid coke, a byproduct of upgrading bitumen to synthetic crude oil that is being produced and stockpiled in large quantities (over 50 million tonnes) in Alberta. The Green Technology Research Group’s work on oil sand petroleum coke directly addresses the environmental issues associated with the oil sands industry, such as water quality and consumption and air quality.

While most pollutants are generated locally, they can travel and become global in scale. A better understanding of pollutant behaviour in the environment is essential to the protection of

the natural environment. In collaboration with Dr. Sunling Gong of Environment Canada, the Group’s research on the effects of aerosols on climate change contributes to a more accurate assessment of the issue, particularly global warming, and helps researchers to devise a strategy to deal with the problem.

Jia shares that, “it is essential for future chemical engineers to master chemical engineering fundamentals in order to make the environment cleaner and the world a better place for all.” And through his research, Jia is contributing to that very goal.

Nilima Gandhi

Diving in to solve the problems in our waters

Chemicals are an integral part of our lives; they have provided benefits to society for centuries. However, the recent increase in the development, production, and use of chemicals has created environmental problems at local, regional, and global levels. Hamilton and Spanish



Harbours, located in Lake Ontario and Lake Huron respectively, are two areas that have been affected by the increase in chemical production. Both harbours have been identified as Areas of Concern by the International Joint Commission (IJC).

Fish consumption advisories are in place for Hamilton Harbour largely due to elevated PCB levels. According to Chemical Engineering PhD Candidate Nilima Gandhi, PCB concentrations have remained high in the area since the mid-1980s despite the implementation of active source control measures. Meanwhile, Spanish Harbour was designated as an Area of Concern in 1985 as a result of tainted fish flavour, impaired communities of bottom-dwelling organisms, and nutrient enrichment.

Under the supervision of cross-appointed Associate Professor Miriam Diamond (PhD 9T0) from the Department of Geography, Gandhi models contaminants in these water systems. “My research is directed to contribute to the scientific understanding of chemical behaviour in the environment and assist management in making scientifically sound decisions and action plans,” says Gandhi.

To date, she has used computer-generated models to examine various real-life environmental contamination problems such as PCBs and PPCPs in Hamilton Harbour and copper and nickel contamination in Spanish Harbour. The results of her efforts are expected to assist management in the design of cost-efficient and effective remediation action plans that will minimize the impact of current contaminant levels.

The wide spectrum of chemicals used in the production of everything from computer circuit boards to personal care products makes it challenging to understand how they move in the environment and what their impact on human health and the environment will be. It was this challenge that encouraged Gandhi to become engaged in the field of environmental modeling. During her last year of undergraduate studies at U of T, she read a sentence that would impact her future research direction: “If we are going to live with these chemicals so intimately, we better understand their behaviour.”

Dani Couture is a Toronto-based writer and poet. Her first book, Good Meat, was published by Pedlar Press (2006).

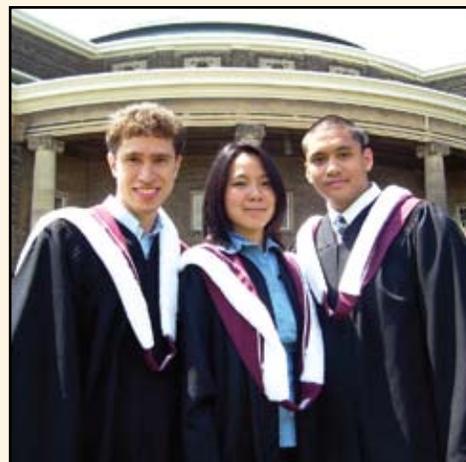
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Skule™ Society members are important to our success.

We are committed to keeping our Skule™ Society members informed of the Department's activities and involve our members more actively in the life of the Faculty. As a member, you will have greater and more meaningful opportunities to interact with students and faculty through programs and events specially created for you.

If you would like to join Skule™ Society or have any questions, please contact Jennifer Lancaster, Senior Development Officer, at 416-946-0566 or jennifer@ecf.utoronto.ca



Three Top 35 Under 35

Two young researchers affiliated with the Department were recognized by MIT's Technology Review as some of 2008's Top 35 Innovators Under 35. **Dr. Milica Radisic**, an Assistant Professor of Chemical Engineering, was recognized for her research that seeks to regenerate beating human heart tissue that is damaged by cardiac events like heart attacks. Typically scar tissue generates after a heart attack, which impairs normal heart rhythms. Through Radisic's work, new cells can be regenerated utilizing an electronic pulse that can, in essence, keep the beat. Her work was profiled in the Winter 2009 issue of the U of T Magazine.



Dr. Jeffrey Karp (PhD 0T4) was also recognized for creating a surgical tape that securely closes a surgical incision and then biodegrade completely over time. Karp is an Instructor in Medicine and Health Sciences and Technology, Harvard Medical School and the Director of the Laboratory for Advanced Biomaterials and Stem-Cell-Based Therapeutics at Brigham & Women's Hospital in Boston, Mass. He was also recently presented with the 2007/2008 Undergraduate Research Opportunity Program (UROP) Faculty Mentor of the Year Award by MIT.



In 2007, **Dr. Ali Khademhosseini** (Chem 9T9, MASC 0T1) was recognized by TR 35 for developing a technique for creating living tissue in a lab for use in drug testing and potentially, healing organs. He is an Assistant Professor of



Medicine and Health Sciences and Technology at Harvard-MIT's Division of Health Sciences and Technology and the Harvard Medical School. He also received the 2007 BMW Scientific Award in the dissertation category.

SCI Canada

Chemical Engineering graduates are well represented amongst honourees for the 2009 Society of Chemical Industry Canada awards. **Dr. Stephen Dunn** (Chem 6T7, MASC 6T9, PhD 7T1) is recognized with the Kalev Pugi Award for pioneering the development of novel solvent-based processes for the in situ recovery of bitumen from Alberta oil sands. Dunn is Director of Process Design and Development with Hatch Ltd.

Dr. Larry Seeley (Chem 6T6, MASC 6T8, PhD 7T2), founder and president of Recapture Metals Ltd., is being recognized with the International Award. Seeley, who is being recognized for his contributions to the global chemical industry, is the out-going chairperson of the Department's Board of Advisors.



Brian Wastle (Chem 6T7) is being presented with the Canada Medal for his work promoting and protecting the national chemical industry. Wastle spent 25 years with Dow Chemicals and has been serving for more than 16 years as Vice President of Responsible Care with the Canadian Chemical Producers' Association.

In addition, Professor Emeritus and former Department Chair **James Smith** will be presented with a Distinguished Service Award from the UK-based parent organization, Society of Chemical Industry. The awards will be presented at a special dinner on Thursday March 26, 2009.



Faculty

Professor **Grant Allen** (Chem 8T1, MASC 8T3) has been named a Fellow of the Chemical Institute of Canada, a senior class of membership that recognizes the merits of CIC members who have made exceptional contributions to the Chemical professions. Allen is currently serving as President of the Canadian Society for Chemical Engineering.

Professor Emeritus **David Boocock** was presented with the 2008 LeSeur Memorial Award by Society of Chemical Industry Canada for his pioneering research on biogas.

Professor Emeritus **Michael Charles**, former Chair of the Department and Dean-emeritus of the Faculty of Applied Science and Engineering, was named Fellow of the Engineering Institute of Canada for his service to the profession and to society.

Professor **Miriam Diamond** (PhD 9T0) was named the 2007 Canadian Environmental Scientist of the Year by Canadian Geographic. She is cross-appointed to Chemical Engineering from the Department of Geography.

Professor **Levente Diosady** (Chem 6T6, MASC 6T8, PhD 7T2) has been named a Fellow of the Canadian Academy of Engineering. Founded in 1987, the Academy is a full member of the Council of Academies of Engineering and Technological Services and has approximately 300 active members and 90 emeritus members.



Professor **Greg Evans** (Chem 8T2, MASC 8T4, PhD 8T9) was presented with the Joan E. Foley Quality of Student Experience Award by the University of Toronto Alumni Association for his contributions to student life.

Professor **Doug Reeve** (MASC 6T9, PhD 7T1), Chair of the Department, was inducted into the Paper Industry International Hall of Fame in Appleton, Wisc. on October 23, 2008. Reeve is an internationally renowned researcher and educator in the pulp and paper field.

University Professor **Michael Sefton** (Chem 7T1) was presented with the Founders Award by the Society for Biomaterials. The award recognizes long-term, landmark contributions to the discipline of biomaterials.

Professor Emeritus **James Smith** was a recipient of the 2007 Award for Innovation presented by the Canadian Manufacturers and Exporters for his work with Eco-Tec Inc.

Professor **Peter Zandstra**, cross-appointed to the Institute of Biomaterials and Biomedical Engineering, was the recipient of the 2008 McLean Award, the University's prestigious award for early-career researchers. Zandstra has established himself as a world leader in the field of stem cell engineering, an emerging field that aims to heal or regenerate damaged or nonfunctioning organs and tissues.

Alumni

David Colcleugh (Chem 5T9, MASC 6T0, PhD 6T2) was named the recipient of the Leaders of Tomorrow Alumni Award, presented by the undergraduate students of the Department, at the 23rd Annual Chemical Engineering Dinner. The award recognizes the contributions of an alumnus to student life within the Department.

Howard Goodfellow (Chem 6T4, MSc 6T5, PhD 6T8) won the 2008 Canada Medal from the Society of Chemical Industry Canada for his services to the national chemical industry. He was also presented with the 2007 Engineering Medal (Entrepreneurship) by the Ontario Society of Professional Engineers and the Professional Engineers Ontario



Bert Wasmund (PhD 6T6) was presented with an Honourary Doctor of Science degree by Queen's University for his service to the institution and to the engineering profession at the May 26, 2008 convocation.

Bill Troost (Chem 6T7) and **Bert Wasmund** (PhD 6T6) were presented with 2008 Arbor Awards, presented by the University of Toronto Alumni Association, which recognizes alumni volunteerism. Troost and Wasmund are both long-serving members of the Department's Board of Advisors and regular participants in Leaders of Tomorrow events.

Students

Ghazal Azimi (PhD Candidate) was one of the recipients of the 2008 Teaching Assistants' Training Program (TATP) Teaching Excellence Awards. She was chosen from among 66 teaching assistants from all three campuses of the University, who were nominated by more than 200 faculty and undergraduate students.

Rachel Castelino (Chem 0T8) was presented with the L. E. (Ted) Jones Award at the Engineering Alumni Awards Dinner on November 6, 2008. The award recognizes a graduating student who has achieved distinction in his or her academic program while making a significant contribution in the arts.



Derek Chan (Chem 0T8 + PEY) will be presented with a 2009 Gordon Cressy Student Leadership Award on March 31, 2009 for his contributions to student life. The Cressy Award is presented by the University of Toronto Alumni Association.

Flor Yunuen Garcia Becerra (PhD Candidate) was a finalist for the Adel S. Sedra Distinguished Graduate Award, which is presented by the University of Toronto Alumni Association.

Kerolyn Shairsingh (Chem 0T8) was the recipient of the 2008 Gordon Cressy Student Leadership Award for her work as Vice President of the New College Residence Council. The Cressy Award is presented by the University of Toronto Alumni Association.

Sabina Di Risio and **Nick Woods** (MSc Candidates) placed second and third in the Henry Bolker Award for Best Seminar competition at the 2008 Canadian Pulp and Paper Graduate Students Poster Session and Seminars. At the same conference, **Lelah Kobari** (MSc Candidate) placed third in the Alkis Karnis Memorial Prize for Best Poster competition.

Keep us posted of your achievements. We want to include your honours and awards here too! Send details of your accomplishments to external.chemeng@utoronto.ca

Chemical Bonding

Zoe Coull (PhD Candidate) and **Nick Coulthard** (Chem 0T4, MASc 0T6) were wed on November 5, 2008 at Toronto City Hall surrounded by friends and family.

Monika Skonieczny (née Chmiel; Chem 0T6 + PEY) married **Chris** (Eng Sci 0T3 + PEY) on May 31, 2008 at St. Thomas Aquinas Church (Newman Center) on the U of T campus.



Francisca Ogundele (Chem 0T1) married **Philippe Le Menn** on September 29, 2007 in Mississauga, Ontario. The couple is “stoked!”

Babies

Joan Chen (Graduate Assistant) gave birth to her second child, supported by her husband Gunther. **Christian Javier** was born on March 12, 2008 and weighed 6 pound, 10 ounces. The new parents are exhausted but very happy.

Nick Coulthard (Chem 0T4, MASc 0T6) and **Zoe Coull** (PhD Candidate) welcomed their first child, **Isobel Grace**, on July 5, 2008. She weighed 9 pounds.



Anne-Marie Heron (Chem 9T4, MASc 9T6) gave birth to daughter **Abigail** on June 23, 2007 in Thunder Bay, where Anne-Marie is employed at the Thunder Bay Regional Research Institute.



Haley Kermis (née Clark; Chem 9T4) gave birth to twins **Ben** and **Claire** in April 11, 2007. They join older brother **Matthew** (born July 17, 2004) and father **Tom**.



Passings

Bigelow, Charles Cross
(April 25, 1928 – November 25, 2008);
Chem 5T3

Black, S. Donald Bruce
(April 10, 1931 – July 5, 2008); Chem 5T3

Broad, Robert Leslie “Bud”
(December 11, 1911 – January 22, 2009);
Chem 3T6

Downing, Alfred Eric “Bud”
(February 28, 1923 – February 4, 2008);
Chem 4T7

Dunlop, Keith G.
(January 17, 1929 – January 13, 2008); Chem 5T2

Ford, James Douglas
(October 10, 1931 – February 3, 2008);
MASc 5T6, PhD 6T7

Green, Hugh Raymond
(May 27, 1915 – August 25, 2008); Chem 4T0

Leidner, Jacob
(October 27, 1946 – February 22, 2008);
Chem 7T2

Mason, Peter
(May 5, 1921 – November 26, 2008); Chem 4T7

Tiefenbach, Bella
(May 1, 1922 – November 7, 2008); former lab demonstrator.

Turvolgyi, Bertalan Laszlo
(October 20, 1924 – January 25, 2009);
Chem 5T3

To contribute to Family News, please contact:

Tel: 416-978-8770 or E-mail: external.chemeng@utoronto.ca

Thanks to our generous supporters

The Department of Chemical Engineering and Applied Chemistry wishes to gratefully acknowledge the generous financial support provided by our alumni and friends over the past year. We try to ensure that our list is as accurate as possible, but should anyone have been unintentionally omitted, please accept our apologies. Please contact us at 416-978-8770 or external.chemeng@utoronto.ca to correct the oversight.

May 1, 2007 to December 31, 2008

Edgar Joel Acosta
Ammar Al-Joundi
Robert Amaron
Georgia Anastasakis
Helena Andresen
Miriam E. Ardagh
Judi Armstrong
Harold L. Aronovitch
Kyla Marie Augustine
Peter J. Aust
Drew Baird
Bank of Montreal
Duncan H. Barber
A. T. Baron
Mary Barroll
Daniela F. Bassan
Anne E. Bawden
Mary E. Beverly
Debbie A. Birks
John W. Blynsniuk
Boeing Company
Giuseppe Boer
Nathan Boidman
Carl J. D. Bolhuis
Charles G. Bowles
Claire Rhian Boxall
William Brock
Phyllis L. Bruce
William H. Burgess
Gary Burkhalter
Kevin J. Burns
Robert D. Burns
R. Brian Calalang
Colin J. Campbell
Canampac ULC
Paul C. Carder
Frederick John Carter
Lino Casalino
CCH Canadian Limited
Robert Chachel
Louis Siu Kit Chan
Donald Alfred Chant
Michael E. Charles
CERCL
Linda P. Chiasson
Marjorie Cochrane
David Colcleugh
Paula T. Coutts
Peter Coy
Heidi Crann
Ted Cross
David T. Culliford
John A. Curry
Sonia De Buglio
Bernard DeAbreu
William Dowkes
Nancy Draper

Howard A. Dube
Kenneth J. Duffy
Marni L. Ellis
Bruce A. Endicott
Jill Erkelenz
Gregory J. Evans
Judith A. Farrant
Shari Graham Fell
Margaret Field
Michael S. Fila
Anastassia Filenkova
Alice F. S. Fischel
William F. Flanagan
Ronald P. Fournier
Margaret Franklin
Eleanor Freitas
John Garofalo
Derek George
Georgia-Pacific Corporation
Sabrina Gherbaz
Edna Gibson
Harkrishan (Harry) S. Gill
Bruno Girard
Vesna M. Gmazel
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Philip Hampson
Karen S. Hann
James D. Hannah
Maureen Harquail
Lawrence H. Hartnett
Helen Harvey
Robert M. Hayashi
Betty Hill
Richard F. Hooper
Vahe Philip Hovnanian
Caroline Hubberstey
Sidney Joseph
Reem Kardasopoulos
Marc Kemerer
Claire M. C. Kennedy
Carole Kerbel
John Khajadourian
George Francis King
Carol Kisil
Darrell L. Kloeze
E. George Kneider
Mark T. Kortschot
Mei Ling Kwee
Elias Kyriacou
Geoffrey Lau
Rika Ka Yan Law
Nicholas J. Leblovic
Deborah Legrove

Karen Lev
June May Ing Li
James E. Lightfoot
Henrik Londen
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Rebecca Pui Chee Lun
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Avery MacLean
Maxine E. Maksymetz
Robin L. Martin
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Scott T. Mills
Charles Mims
E. B. Missen
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Bharat B. Mithel
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Keren Morehead
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Upcoming Events

Join us for the 24th Annual Chemical Engineering Dinner

Friday, March 27, 2009
Colony Grande Ballroom
89 Chestnut Street Residence

Reception: 6:00 p.m.
Dinner: 7:00 p.m.

Mix and mingle with classmates
See your former professors
Celebrate the current success of the Department

Tickets are \$100.
Learn more at www.chem-eng.utoronto.ca



Spring Reunion 2009

Spring Reunion
2009 will be held
Thursday, May 28
– **Sunday, May 31.**
The weekend
will be filled with
events, lectures
and luncheons,
something for
everyone.



Chem Eng Lunch

Join your classmates for a lunch in the Chem Eng Undergraduate Common Room followed by a tour of the Wallberg Building. Learn about current research, visit the Unit Ops Lab and meeting with current students and faculty.

Saturday, May 30, 2009
Wallberg Building (200 College Street) WB 238
Time: 12:00 – 2:00 p.m.
Price: Free!
Register at www.alumni.utoronto.ca/chemenglunch

Engineering Reunion Dinner

The Faculty of Applied Science and Engineering Spring Reunion is holding a reception hosted by the Dean followed by dinner with your classmates in recognition of your anniversary. Come and enjoy an evening to reconnect and rekindle your Skule™ spirit.

Saturday, May 30, 2009
University College, West Hall
15 King's College Circle
Reception: 4:30 p.m.
Dinner: 6:00 p.m.
Price: \$50.00 p/p

For more information on the Spring Reunion events please go to website:
www.alumni.utoronto.ca/engspringreunion

Special appearances by the Lady Godiva Memorial Band & The Cannon.

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