

INTERFACES

CHEMICAL ENGINEERING AND APPLIED CHEMISTRY, UNIVERSITY OF TORONTO



Volume 3, Number 1 *Spring 2005*

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“leadership is an observable,
learnable set of practices”

From the essay by

James M. Kouzes and Barry Z. Posner

in “The Future of Leadership”

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Welcome to the third year of INTERFACES, and thanks to all of you who have contributed your news and photos. INTERFACES is about the community of the Department: students, alumni/ae, faculty, staff, partners in industry and government, and friends.

Last year, in concert with the University, we created a Strategic Plan for 2004-2010. Our vision is that “We will be among the top ten chemical engineering departments in the world, educating leaders of tomorrow”. There is tough competition out there, so we must think strategically, work hard, and engage alumni/ae and industry partners to achieve this high rank. We have identified a series of Year One implementation goals. We will kick off a campaign to rebuild the “Unit Ops” lab, establishing a first-class, hands-on chemical engineering operations laboratory with large-scale process equipment. We will renovate the computer lab. We will create a new design team learning studio. We will dig into an analysis of the discipline: “The Future of the Chemical Engineering Discipline—Evolution or Revolution?”. We will be leaders in the development of the Faculty-wide Bioengineering initiative. We will complete a full review of the graduate curriculum and course offerings. We will assess English language skill development among undergraduates through evaluation, training, and tracking.

The LEADERS OF TOMORROW initiative is developing rapidly. We started the fall term with the opening of the newly renovated Undergraduate Common Room, made possible by the efforts of a Summer Leadership Program Design Team and by the generous donations of corporate partners and alumni/ae, including a class gift from the Class of 8T9. Later in September, we held the “Leaders of Today (alumni/ae) Meet Leaders of Tomorrow (students)” breakfast, which was sold out, with a long waiting list. In October, Frank Dottori,

CEO of Tembec, told a packed room the remarkable story of how he led a town to take over a pulp mill, and the subsequent creation of a multibillion-dollar forest industry giant, sending the message that one person can make a difference. We also ran two tutorials on “How to Apply for a Rhodes Scholarship”: in January, two current U of T Rhodes scholars shared their extraordinary experiences, including meeting Bill Clinton and hosting tea for the President of Latvia. We created the framework for “Leaders of Tomorrow” scholarships for Chemical Engineering undergraduate students based on the philosophy behind the Rhodes Scholarship: “Proven intellectual and academic attainment of a high standard is the first quality required of applicants, but they will also be required to show integrity of character, sympathy for and protection of the weak, the ability to lead and the energy to use their talents to the full.” Our aim is to endow eight of these scholarships.

We must pull together, and we must enlist the support of our friends. With this in mind, I am delighted to welcome four new members of the Board of Advisors: Bassel Annab, Sandra Odendahl, Bill Troost, and Bert Wasmund. My thanks to retiring Board members Nadine Riley and John Voss.

Our cause is worthy. Please join us.

DOUG REEVE

*Frank Dottori Professor
of Pulp and Paper Engineering,
Professor and Chair,
Department of Chemical Engineering
and Applied Chemistry*



Leadership Awards and Scholarships

The Department offers many awards and scholarships, some based on academic achievement and some addressing financial need. There is yet another category, which celebrates leadership potential, recognizing student council activity, participation in athletics, community involvement, and volunteerism. The recipients are innovative thinkers who have the ability to inspire others and who become involved in the community, hoping to make the world a better place.

The Department is proud of the many students honoured with leadership awards. Some of this year's recipients are profiled here, along with the most recently established award.

Colcleugh Family Award

A prestigious scholarship has been established by the Colcleugh Family, including **David Colcleugh** (Chem 5T9), current Chair of the Department's Board of Advisors. The purpose of the awards is to attract some of the brightest, most well-rounded students to the Department. The scholarship will be awarded to two students this fall.

ERCO Worldwide Scholarship

The winner of this year's ERCO Scholarship is **Jessica Hedges-Chou** (Chem 0T8). Jessica has volunteered at the Ontario Science Centre, helping to mount exhibits, and was a student host in their March Break Program. She has also worked as an English and math tutor for Rebound Youth Services. As a member of the Interact Club in her high school, she raised money for the Humane Society and the Canadian Landmines Association. The versatile Jessica is a talented musician who plays clarinet and bass clarinet.

Leslie and Lois Shaw Scholarship

Michael Saleniaks (Chem 0T8) was awarded the Leslie and Lois Shaw Scholarship. In 2003–2004, Michael was voted Senior Athlete of the Year by his high school, where he was MVP and Captain of both the Varsity Hockey Team and the Senior Soccer Team. He is currently a member of the U of T Varsity Blues Men's Soccer Team. Michael is a U of T Scholar and recipient of the J.H. Couke Chemistry Award and the Humberside Centennial Achievement Award.

Kodak Scholarship

This year's winners included **Mary Siew** (Chem 0T5), **Roki Fukuzawa** (Chem 0T6), **Teresa Chee** (Chem 0T6), **Kevoak Hacat** (Chem 0T6), and **Mirza Haque** (Chem 0T6).

Enwave Leadership Award

This year, three Chemical Engineering students received the Enwave award, which honours students who have demonstrated initiative in improving the environment.

Jennifer Sauks (Chem 0T8), a competitive swimmer and skier and an accomplished musician, has a deep interest in environmental issues. She worked as an Ontario Stewardship Ranger with the Ministry of Natural Resources in the summer of 2003, and this past summer, she was an assistant Fishery Technician. As the forestry and soils expert, she led her high school team to a first place finish in the Forestry division of the local Environthon Competition.

Andy Toh (Chem 0T8), a former Section Commander in the Singapore Combat Engineers and high school science teacher, has helped raise funds for 'Sponsoring a Child', a project that funds the education of African children. Andy has participated in beach clean-up activities and

has conducted research on the harmful effects of greenhouse gases.

Kerolyn Shairsingh (Chem 0T8) was Charter President of the Interact Club and Vice Captain of one of the houses in her high school. She enjoys latin dancing, swimming, and karate. She was a member of the team that won an honorary award for the Royal Bank of Trinidad and Tobago's Young Leader's Project, whose aim was to help the environment.

External Scholarships

Lillian De Melo (Chem 0T6) received the Canada Millennium Scholarship Foundation's Millennium Excellence Award 2004, which is given to two hundred students across Canada. An active member of the Chem Club and the Engineering Society, she is also the Vice Chair of the Student Program Organizing Committee for the CShE Conference 2005 in Toronto.

The Department hopes to establish more awards that recognize leadership qualities, with the goal of encouraging students to interpret the engineering profession in the broadest possible terms.

Common room donors and design team



Common Room Opening

On Thursday, September 16, 2004, after more than a year of planning and renovation, the new Chemical Engineering Undergraduate Common Room was officially opened.

In the summer of 2003, Department Chair Professor Reeve challenged a group of Summer Leadership Program students to redesign the common room. The design team developed plans incorporating conference room facilities, leather couches, a TV, and a bar. In August 2003, the Board of Advisors decided that the proposed budget of \$94,000 was too high, but impressed with the students' hard work and enthusiasm, they offered to help find ways to lower the costs, transforming the dream into reality.

The official opening celebration was attended by donors, faculty, staff, and students. After the ceremonial ribbon was cut, a cake decorated with the inscription "Home away from home" was enjoyed by all.

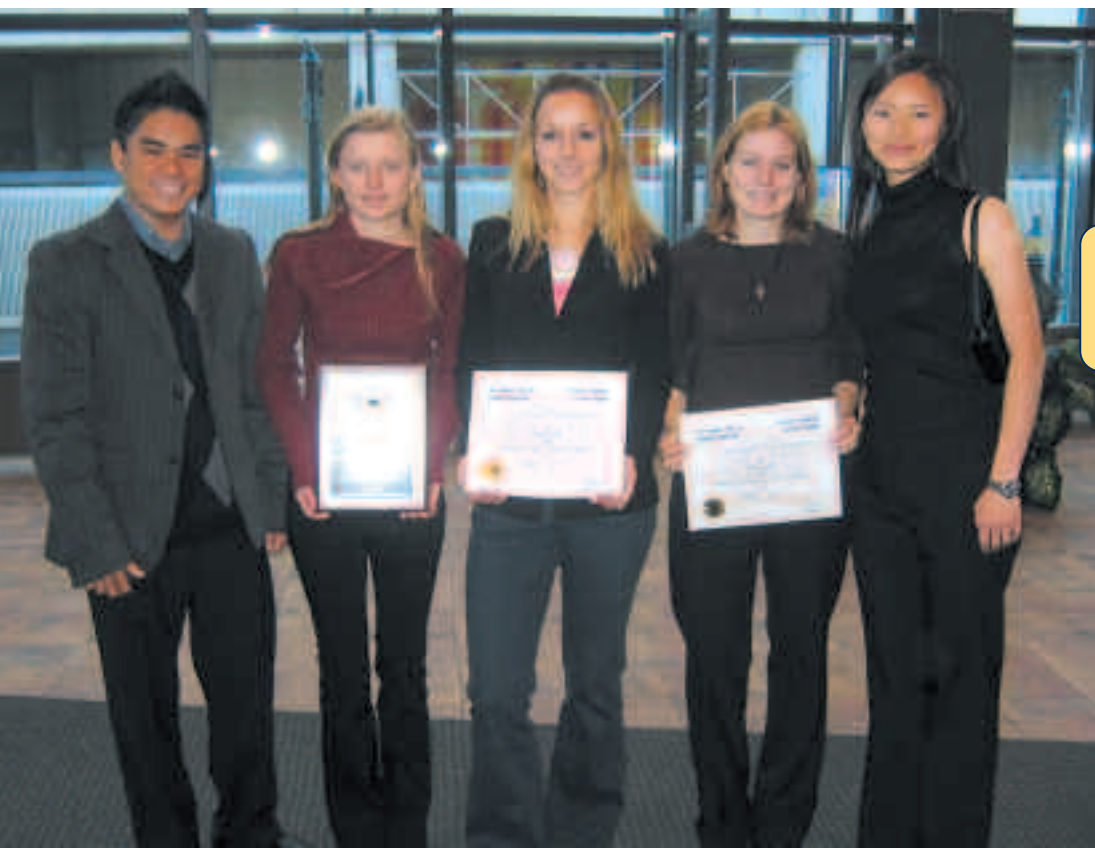
CSCHE Information Sessions

The Canadian Society for Chemical Engineering (CSCHE) is dedicated to the advancement of chemical engineering in Canada. Its membership comprises practicing engineers and academics, including a large student member base.

Under the guidance of faculty advisors Professors **Grant Allen** and **Levente Diosady**, the University of Toronto Student Chapter of CSCHE strives to answer the question *What is Chemical Engineering?* by presenting information sessions on PEY, graduate studies, and the Jeffery Skoll BASc/MBA Program, and by organizing plant tours. Among its activities, the highlight is planning the trip to the annual CSCHE Conference, and this year, twenty students traveled to Calgary. In preparation for the conference, last summer, **Paul Chavez** (Chem 0T5 + PEY), the Chair, and **Roki Fukuzawa** (Chem 0T6), the Vice-Chair, organized a Student Symposium. Students were given the chance to present their research to a panel of judges, obtaining expert feedback and gaining valuable experience.

Four of the Department's students delivered presentations in the undergraduate student competitions. **Tanya Hauck** (Chem 0T5) won first place in the Robert G. Auld Student Paper Competition for her presentation *Self-Assembly Characteristics of Two-Photon Absorptive Fullerene-Diphenylaminofluorene Conjugates and Other Nanotechnology Developments*. **Agnes Durlik** (Chem 0T5 + PEY) won the first place Reg Freisen Student Oral Paper Award for her presentation *Improving Communication in Undergraduate Chemical Engineering Programs*. **Karina Lorenzo** (Chem 0T6) was awarded second place in the Robert G. Auld Student Paper Competition for her presentation *Application of Low-Cost Nutrient Sources in High Temperature Biofiltration of Hydrogen Sulphide*. As well, **Lillian DeMelo** (Chem 0T6) gave an excellent presentation entitled *Increasing Nuclear Subjects in Chemical Engineering Education*.

The 2005 conference will be held in Toronto, October 16–19. The CSCHE Program Committee is already planning this important event, and students are encouraged to develop submissions.



L to R: Paul Chavez, Tanya Hauck, Agnes Durlik, Karina Lorenzo, Roki Fukuzawa

Halloween Party

The Chemical Engineering Graduate Students' Association (CEGSA) held its annual Halloween Party on Friday, October 29. Costumed graduate students in the guise of superheroes, movie stars, and animals packed the Common Room. Some of the highlights of the night were the pumpkin carving competition and bobbing for apples.

The CEGSA philosophy is that having fun is the best way to encourage camaraderie among graduate students in the Department. The 2004–2005 CEGSA Executive Committee is co-chaired by **Chris Goode** and **Alison Waller**. The executive consists of thirty-two students, making it the largest in CEGSA's history. Its three sports directors and six social directors are working to fill the calendar with many more exciting events.



Members of the new CEGSA Executive:

Back (L to R): Doug Bauman, Leszek Reimus, Ankur Dudani

Middle (L to R): Chris Goode, Teresa D'Souza, Zoe Coull, Forouz Farahani-Alavi, Alex Hayes, Claudia Gonçalves, Gursaran Singh, Lateef Olayiwola

Front (L to R): Vlad Litvinov, Shahram Karimi, Charles Whang, Nick Coulthard

Awards and Distinctions

Alex Goraltchouk has won the Crothers Family Fellowship in Peripheral Nerve Damage. An M.A.Sc. student in Professor **Molly Shoichet's** laboratory, he is developing a combination strategy for nerve injury repair that uses synthetic scaffolds and stem cells to promote regeneration in the injured spinal cord.

The strategy involves a combination therapy approach that includes porous hydrogel tubes, drug delivery, and stem cells, with the ultimate goal of creating an environment that enables the body to repair itself.

The Mitchell Scholarship was awarded to M.A.Sc. student **Meng Shi**, who also works under the supervision of Professor Molly Shoichet. The goal of Meng's project is to develop biodegradable nanoparticles for targeted and controlled intravenous delivery of anticancer drugs.

Anticancer drug targeting using polymeric devices can maximize the therapeutic efficacy of anticancer drugs and reduce their systemic side effects. The new "smart" system with monoclonal antibodies as targeting ligands is capable of targeting specific cancer cell types through



Mitchell Scholarship winner
Meng Shi

ligand-receptor interactions. A successful design will benefit cancer patients by reducing the number of injections of cancer drugs and by increasing therapeutic benefits with fewer side effects, which will translate into longer life and improved health for Canadians.



Brain Teaser

4 and 7 makes 9

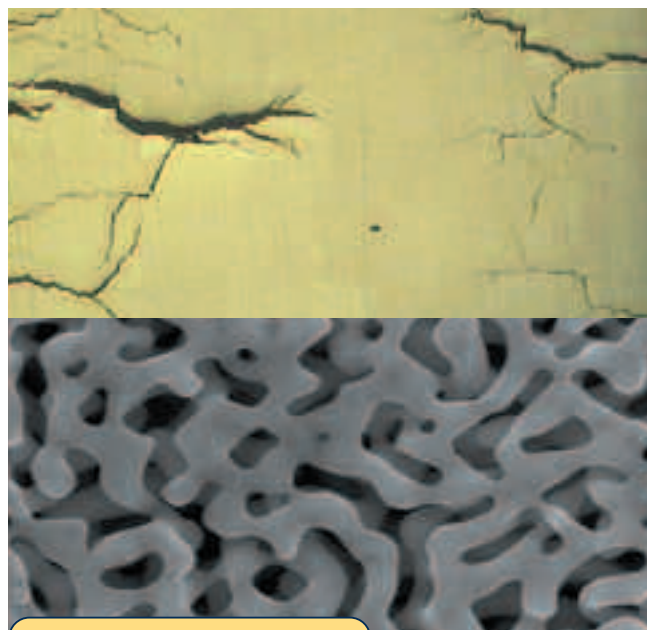
How can you measure 9 cups of water using a 4-cup and a 7-cup container?
(Hint: How many ways can both containers be used together?)

Please visit our website www.chem-eng.utoronto.ca for the solution.

Professor Roger Newman: NSERC/UNENE Chair Celebration

On October 13, as part of the Department's Lectures at the Leading Edge series, Dr. **Ken Petrunik** (AECL) delivered a talk entitled *AECL and CANDU: an electricity supply solution*. Those invited included representatives of AECL, Bruce Power, the Canadian Nuclear Association, NSERC, OPG, and the University Network of Excellence in Nuclear Engineering (UNENE). The current UNENE sponsors are OPG, Bruce Power, and AECL. UNENE also has a mandate to develop graduate programs in nuclear engineering, in particular, a part-time multi-university M.Eng. degree that has already recruited its first and second cohorts of students.

In concert with a key goal of the Department's Strategic Plan, the development of sustainable energy research, UNENE is the cosponsor of an NSERC Senior Industrial Research Chair, now filled by Professor **Roger Newman**. Professor Newman, who spent twenty years at the University of Manchester Institute of Science and Technology (UMIST), is a world-renowned corrosion scientist. He has worked on almost every metallic material in a wide range of



Top: stress corrosion cracking
of stainless steel
Bottom: nanoporous metal

environments, but his current focus is on materials used in nuclear power generation.

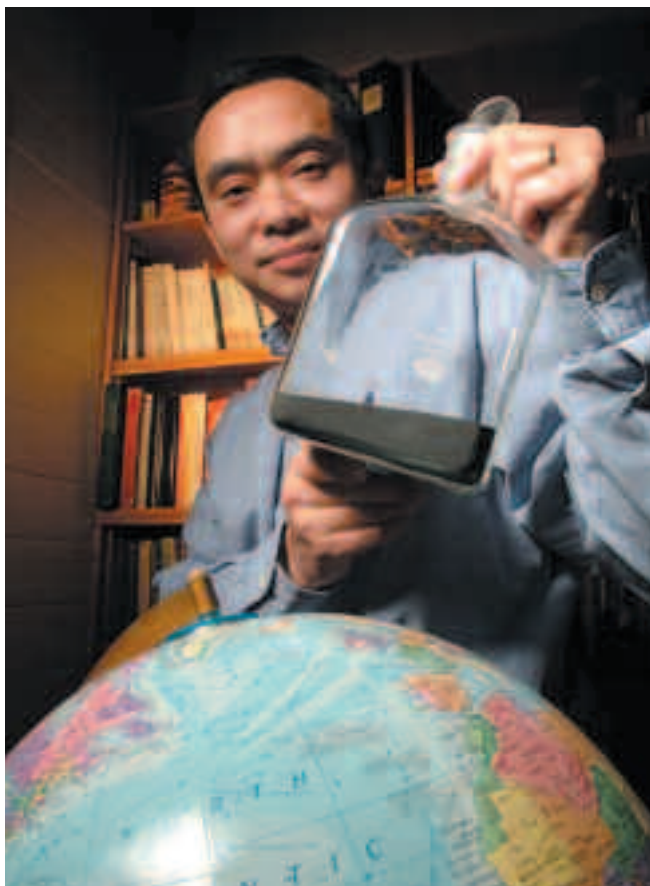
In nuclear power systems, slow crack growth is expected and is managed by system inspection. Stress corrosion cracking (SCC) is an intriguing slow crack growth process that can occur at rates as low as 0.1 to 1 mm per year, but in extreme cases, it can propagate much faster. The alloys in question are ductile, so SCC does not cause major ruptures, which could pose a public safety risk. Nevertheless, it is essential to improve the prevention and management of SCC, not only to extend the life of existing plants but also to minimize SCC in future plants.

Professor Newman studies the steels and nickel-based alloys used in CANDU feeder pipes and steam generators. His research complements the work of UNENE Professor **Rick Holt** at Queens on the zirconium-based alloys used in CANDU reactor core components. It spans the range from fundamental atomistic considerations to applied investigations of material performance.

Professor Charles Jia: ECOcarbon

Professor **Charles Jia's** research focuses on the behaviour of pollutants in natural and industrial systems and on turning discoveries into economically viable innovations. Projects range from industrial waste utilization to air pollution control.

In 1998, in collaboration with Syncrude Canada, Professor Jia's research group initiated a study on oil sand fluid coke, a byproduct produced in excess of 5000 tonnes per day in Alberta. It was discovered that fluid coke can be activated via a new process called SOactive. The activated fluid coke was called "ECOcarbon" for its unique structure and properties, which are especially suitable for controlling mercury emission from coal-fired power plants.



Recently, the Alberta Government awarded a \$450,000 grant to Professor Jia and his collaborator Professor **Donald W. Kirk** to develop the SOactive process and ECOcarbon into an integrated part of clean coal technology. The research addresses two crucial challenges: mercury and acidic emissions from coal combustion. The resulting advances in clean coal technology will help ensure a competitive and sustainable energy industry in Canada.

Faculty Sports Stars

Professor **Vladimiro Papangelakis** volunteered at the Athens 2004 Olympic Games, participating as a timing and scoring assistant for gymnastics events. He entered into the computer the score that gave the gold medal to Canadian gymnast Kyle Shewfelt for the floor exercise. Professor **David Kuhn** was inducted into the Queen's University Track and Field Hall of Fame on October 15. Since 1982, he has held the Queen's University Indoor Pole Vaulting Record, winning the OUAA Gold Medal in 1979 and the OUAA Silver Medal in 1980 and 1981. He was Track Captain in 1980/81 and Track and Cross Country Captain in 1981/82.

Awards and Distinctions

Professor **Molly Shoichet** received the \$100,000 McLean Award for her work in the area of spinal cord regeneration. The McLean Award supports an outstanding researcher at a relatively early career stage, no more than twelve years out from the Ph.D.

Professor **Michael Sefton** has been named to the Michael E. Charles Chair in Chemical Engineering. The Chair was established to honour Dean Emeritus **Michael E. Charles** in recognition of his distinguished service to the University.

Engineering Alumni Awards Banquet

On October 28, at Hilton Toronto, Chemical Engineering Alumni/ae swept the awards at the Engineering Alumni Honours & Awards Banquet. Professor **Levente Diosady** (Chem 6T6) was inducted into the Hall of Distinction for the humanitarian implications of his research in food engineering. Professor Diosady helps developing countries through his work on micronutrient fortification of staple foods such as rice. **Frank Dottori** (Chem 6T3) was inducted for his unique entrepreneurial career with Tembec Inc., and **Alexander Stuart** (Chem 4T7) was inducted in recognition of his stature as a Canadian and global authority on hydrogen generation and the use of hydrogen as an environmentally friendly fuel.

Mary Roy (Chem 7T9) received the 2T5 Mid Career Award. As VP of Environmental and Regulatory Services at CCL Industries, she is making great strides in addressing environmental concerns. The 7T6 Early Career Award went to **Bassel Annab** (Chem 9T4), founder and President of Exposoft Solutions Inc., an event registration company. The key to Exposoft's rapid growth has been to target a previously unexploited niche.

Class News

Chem 8T9 celebrates its 15th anniversary

Do you remember the year when:

- Ben Johnson won and "lost" a Gold Medal at the Olympic Games in Seoul?
- The Exxon Valdez ran aground in Alaska, producing the largest domestic oil spill in U.S. history?
- Pan Am flight 103 exploded over Lockerbie, killing 259 passengers and eleven people on the ground?
- The space shuttle Challenger exploded upon liftoff, killing all seven crew members?



L to R: Levente Diosady, Bassel Annab, Frank Dottori, John Voss (Chem 8T2, President of the Engineering Alumni Association), Mary Roy, Alexander Stuart, Doug Reeve

- Vice President George Bush was elected President of the United States?
- Approximately sixty students endured four years of courses, including CHE430F, Chemical Plant Design, to obtain a B.A.Sc. in Chemical Engineering?

The Chem 8T9s recalled these and other events during their successful 15th anniversary reunion at Homecoming 2004. Alumni/ae and spouses enjoyed the Hart House dinner dance, reminiscing with classmates and other guests. The reunion provided an opportunity to socialize



Claire Kennedy (back row, centre) with Chem 8T9 classmates on the steps of Wallberg in 1988

with friends and colleagues but, more important, to rally the Skule™ spirit on behalf of the Department. Chem 8T9 grads donated \$5000 to the Undergraduate Common Room renovation fund in honour of their 15th anniversary. Organizers **Pete Noble** and **Claire Kennedy** hope to continue strengthening the Chem 8T9 bonds.

Chem 8T2 Anniversary

The class of Chem 8T2 is launching plans for their 25th Anniversary in 2007. For details, visit www.chem-eng.utoronto.ca (go to Alumni, Chem 8T2).

Leaders of Today Meet Leaders of Tomorrow

The Department continues to strive to “be among the top ten chemical engineering departments in the world, educating leaders of tomorrow”. An important element of its plan to fulfill this mission statement is the **LEADERS OF TOMMORROW** initiative, under whose banner the Department develops events, projects, workshops, and strategies to enrich the undergraduate experience, with a focus on enhancing leadership and team skills.

As this well received program has evolved, students have asked for more alumni/ae involvement. On Friday, September 24, the Department hosted an event called Leaders of Today Meet Leaders of Tomorrow, which was



Leaders of Today Meet Leaders of Tomorrow: A diverse group of Chemical Engineering Alumni share their career experiences with current undergraduate students

attended by twenty alumni/ae spanning the range from Chem 5T4 to Chem 0T4.

Over breakfast, alumni/ae talked about their careers with small groups of students, sharing unique insights and valuable experience. Student attendance had to be limited to forty to maintain personal contact; the result was a long waiting list.

The next event will be held on Friday, February 4, 2005. If you are an alumnus/a or an industry friend and would like to know how you can contribute to this initiative, please contact Kyla Augustine and Sonia De Buglio at leaders.of.tomorrow@chem-eng.utoronto.ca, 416-978-8770.

Baby Chemistry

Sean Deighton (M.A.Sc. 2004) and his wife Nicole are the happy parents of Katherine Elizabeth. She was born on September 24, 2004, weighing 9 lb, 9 oz.

Congratulations to **Yujing Zang** (current M.A.Sc. student) and her husband Xiaobing Song on the arrival of their son, Eric Zifeng Song, born on September 25, 2004. He weighed 7 lb, 10 oz at birth.

With the arrival of their fourth son Peter Daniel, **Dan Tomchyshyn** (Network Administrator) and his wife Susan will be able to start their own hockey team. Peter was born on September 29, 2004, weighing 7 lb, 5 oz.



Asghar Khalaj-Zadeh (current Ph.D. student) and his wife Mozghan had their first child, Tiara, on October 10, 2004. She weighed 8 lb, 3 oz at birth.



Congratulations to **Alex Dvornyak** (Information Technologist) and his wife Iryna on the arrival of their first child, a daughter. Dana made her debut on October 19, 2004, weighing a hefty 9 lb, 7 oz.



Joan Chen (Graduate Administrative Assistant) and her husband Günther Rathgeb had their first child on December 22, 2004. Sebastian, a happy, healthy baby boy, weighed 8 lb.



Weddings and Anniversaries

Jacqueline Busca (Chem 9T1) and **Mike Di Giacomo** (Chem 9T3) celebrated their tenth wedding anniversary on October 8, 2004, with their three children, Aidan, Dillon, and Sydney.



Talya Bloom, nee Manoim (Chem 0T4), and her husband Shmuel Bloom were married on December 27, 2004 in Jerusalem.



Welcome New Board Members



Bassel Annab (Chem 9T4), CEO of Exposoft Solutions, a company providing online registration solutions for event planners



Sandra Odendahl (M.A.Sc. 8T9), Senior Manager, Environmental Risk, the Royal Bank of Canada



Bert Wasmund (Ph.D. 6T6), Executive Director of HATCH, a leading global consulting and engineering organization

Bill Troost (Chem 6T7), President of Peel Plastic Products Ltd., which manufactures flexible packaging materials

To contribute family news, please contact
Sonia DeBuglio.

Telephone: 416-978-8770

Email: debuglio@chem-eng.utoronto.ca

Upcoming Events

Mark your calendars. Whether you want to expand your mind or reunite with classmates or professors, we hope to see you at one or more of these events.

March 9

Skule™ Nite is an annual production written and performed by engineering students. This year, there will be an opening night alumni/ae reception in the East Common Room, Hart House, prior to the performance in Hart House Theatre.

Contact Mary Butera (butera@ecf.utoronto.ca), Alumni Relations Officer, Faculty of Applied Science and Engineering (416) 978-4941

March 18

The Department will host the **20th Annual Chemical Engineering Dinner**, this year honouring the class of 5T5 as they prepare to celebrate their 50th reunion.

The newly renamed **LECTURES AT THE LEADING EDGE** series continues into the new year with speakers representing a broad spectrum of international cutting edge research. Don't miss the two final speakers.

March 30

Professor Gregory Stephanopoulos, Massachusetts Institute of Technology, *Applying the art of pattern discovery to the design of antimicrobial peptides and in vitro metabolic engineering*

April 6

Professor Frank Bates, University of Minnesota Twin Cities, *Block copolymers – designer soft materials*

All seminars are held at 12:30 pm in room 116 of the Wallberg Building, 200 College Street, Toronto, Ontario

June 2

3rd Annual Skule Alumni Golf Classic

Sleepy Hollow Golf and Country Club

This event will begin with a continental breakfast. After the tournament, there will be a lunch, followed by a silent auction, a raffle, and an awards presentation.

Contact Jim Webster (webster@ecf.utoronto.ca), Alumni Relations Officer, Faculty of Applied Science and Engineering (416) 978-3177

June 3

Spring Reunion 2005

The reunion will include a dinner dance for honoured years and a performance by the Lady Godiva Memorial Band.

89 Chestnut Residences

See www.skulealumni.ca for more information.

June 4

Hall of Distinction Ceremony

Professor Levente Diosady (Chem 6T6)

Dr. Frank Dottori (Chem 6T3)

Alexander Stuart (Chem 4T7)

June 1-17

Convocation Spring 2005

Congratulations to the class of Chem 0T5, who will be graduating this spring. We are proud of their hard work and determination.

For more details about these events and other information, visit our website at www.chem-eng.utoronto.ca

Thanks to Our Partners

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**We invite inquiries, comments
and suggestions from readers.**

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In the next issue, we will recognize
alumni/ae and friends who have supported
the Department.