

INTERFACES

CHEMICAL ENGINEERING AND APPLIED CHEMISTRY, UNIVERSITY OF TORONTO



Looking Back, Building Forward

Doug Reeve reflects on ten years as
Chair of the Department of Chemical
Engineering and Applied Chemistry

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“Human beings, by change, renew,
rejuvenate ourselves; otherwise we harden.”

– *Johann Wolfgang Von Goethe,*
German Writer

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Traditionally each issue of INTERFACES begins with a message from the Chair of our Department. For the past ten years, our Chair has been Professor Douglas W. Reeve. Professor Reeve began his term before this magazine was first published. Indeed, its creation is one of the many innovations Professor Reeve has made during his leadership of the Department. Therefore, it is only fitting that as he prepares to step down as Chair, we provide Professor Reeve with a few extra pages to reflect on his decade of service to the Department and on the future of chemical engineering. His insightful reflection will be this issue's feature story.

In this space, let me instead take the opportunity on behalf of the Department's Board of Advisors to express our sincere thanks to Professor Reeve for his strong vision and inspiring leadership. Being engineers, we're inclined to calculate and quantify the impact of Professor Reeve's time as Chair. Consider that since Professor Reeve became Chair in 2001:

- 12 faculty members have joined the Department;
- Two endowed chairs have been established (the Frank Dottori Chair in Pulp and Paper Engineering, and the Chair in the Information Engineering);
- 121 labs and offices in the Wallberg Building have been renovated;
- Research publications have increased by over 93%; and,
- The Department's endowment has grown from \$6.2-million to over \$11.6-million.

This is a remarkable record of accomplishment, which has ensured U of T remains home to Canada's best chemical engineering department and among the best in the world.

Though Professor Reeve may be departing the Chair's office, we are fortunate that he will remain an active member of the Department and continue his service to the Faculty of Applied Science and Engineering as the Director of the Institute for Leadership Education in Engineering (ILead).

The search for the next Chair is well underway and we look forward to sharing with you the results of that process when it concludes. In the meantime, I encourage you to join us at the 26th Annual Chemical Engineering Dinner on Friday March 18, 2011. In addition to celebrating the accomplishments of many members of the Department—students, faculty and alumni—we will toast the accomplishments of Professor Reeve and honour his service. You will find registration information for the dinner on the back cover of this magazine.

Let me also take this opportunity on behalf of the Board of Advisors to extend our sincere thanks to the many alumni and friends who provide financial support to the Department. The names of our donors are listed at the end of this magazine. Their contributions help to support the outstanding work of the Department, including the Lectures at the Leading Edge lecture series.

Thank you for your continued interest in the Department of Chemical Engineering and Applied Chemistry and all the best in the new year.

CLAIRE M. C. KENNEDY
(CHEM 8T9)

*Chair, Chemical Engineering
Board of Advisors
Partner, Bennett Jones LLP*



Faster, Higher, Stronger: Students balance the demands of chemical engineering and their passion for sports

By Denise Hansen

Days start early for MAsc Candidate **Jennifer Sauks**. A member of the University of Toronto Varsity Blues' Women's Rowing Team, Sauks is up before the sun when training.



Jennifer Sauks (left) with teammates on Lake Ontario.

“During the fall, I wake up at 4:30 a.m., take a 45 minute bike ride to practice at Cherry Beach, and then I am on the water anywhere from one to two hours,” she explains. “It’s definitely a time commitment but being on the water, especially when I’m rowing with the other girls and we’re all in sync propelling ourselves forward... it’s amazing and the best feeling ever,” Sauks says.

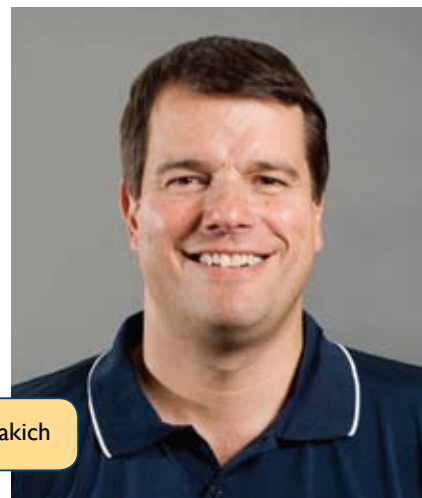
Amazing also is the success Sauks and her team have had over the last few years in competition, culminating in a gold and a bronze medal at the Ontario University Athletics’ 2010 provincial rowing championships this fall. She competed in the championships, which were held in St. Catharine’s, Ontario. Sauks, rowing with her sister Kate, won gold in the lightweight

women’s double competition. They finished with a time of 7:53.7; almost five seconds ahead of the second-place Brock Badgers. The duo also went on to lead the heavyweight women’s eight team to a bronze medal, crossing the finish line in 7:04.8. For their efforts, Sauks and her sister were named U of T Varsity Blues’ Athletes of the Week.

Embracing the challenge of sport as a break from the rigors of chemical engineering, the Department is home to many student-athletes who are proud members of Varsity Blues teams. The Blues represent U of T in competition against other universities and are the most elite teams at the University. Participating on a Blues’ team requires a commitment almost equal to a student’s demanding studies.

Ed Drakich (Chem 8T5), head coach of the Varsity Men’s Volleyball team knows the feeling. A 1985 graduate of the chemical engineering program, he played Varsity volleyball throughout his undergraduate years and was captain of the team beginning in his second year. After graduation, he played professional volleyball and, at one point, was even a full time petroleum engineer at Texaco Canada Resources while training for the 1996 Summer Olympics.

“It can be tough with the time commitment,” Drakich notes adding that the time commitment to Varsity sports is more today for student



Blues Coach Ed Drakich

athletes than it was when he played with the Blues.

Still, if Sauks should find herself looking for people to commiserate with, she doesn't need to look far. Sauks, a graduate student in the second year of her Master's program, works with two other Varsity Blues athletes in the lab of Professor **Tim Bender**: Nordic skier **Graham Morse** (PhD Candidate) and mountain biker **Elijah Bultz** (MAsc 1T0).

It was at Sauks' suggestion that fellow lab partner Morse joined the Blues' Nordic ski team. Wanting to get back into sport after a seven year hiatus, Morse had previously competed in Nordic skiing while in high school. He seized the opportunity and joined the team.

For fellow grad student Elijah Bultz, mountain biking is his sport of choice. He first began in high school and then again when he started grad school at the University of Toronto. Originally from Ottawa, Bultz saw a sign for openings on the school team and decided to join. "It's more of hobby for me to stay in shape for the downhill ski season," Bultz admits.

It is downhill skiing where his heart really lies. During the fall he trains with the mountain biking team, just in time to be ready for ski season. Bultz also coaches downhill skiing.

Athletic accomplishments are not for graduate students alone. **Johnathon Caguiat** (Chem 0T9+PEY), who graduated this past spring, was a member of the Blues' swim team throughout his undergraduate studies. He began swimming when he was just four years old and by the age of seven had joined the competitive swim team, The Scarborough Olympians.

By the age of 18, Caguiat was the second fastest breaststroker in Canada. Soon thereafter he joined U of T's Varsity swim team where he practiced six days a week. When asked of his proudest achievement in sport, Caguiat humbly notes, "I'm most proud of not giving up." This persistence has served Caguiat well as he qualified for Nationals all four years of his university sports career.

Still, juggling both sports and studies has been hard.

"Student athletes are always students first, then athletes," remarks coach Drakich but goes on to say that the Faculty of Applied Science and Engineering has laid the bar high when it comes to recognizing the importance of extracurricular activities and that a University experience should consist of more than just class and books.

"That's what I respect about Engineering at the U of T, because when it comes to supporting intercollegiate... they're the best. And that makes me proud because that's where I'm from," Drakich states.



Graham Morse

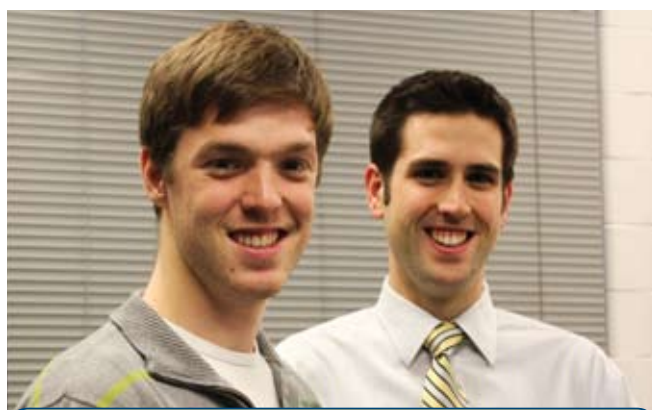


Johnathon Caguiat

Mentoring the Future: Alumni share experience and insights with undergraduates through Skule™ Mentorship Program

By Liam Mitchell

For **Stephane De Vuyst** (Chem 1T2), the future looms large. Though still over a year away from graduating, he is already thinking about life beyond the yellow tile walls of the Wallberg Building.



Stephane De Vuyst with mentor Ian Chown

To find the answers he was seeking, he turned to the Skule™ Mentorship Program, which matches third and fourth year students with alumni mentors who can help students plan for their future careers.

The program, which was first established in 2005, matches 50 students with 50 alumni each year. Run by the Engineering Alumni Office, the program is open to undergraduate students from any discipline in the Faculty of Applied Science and Engineering.

Alumna **Gia De Julio** (Chem 8T2) became a mentor after her youngest child left for university. “I joked that I missed telling my kids what to do, so I found new ‘kids’ to whom I could impart my age-old wisdom,” she remarks.

For De Julio, her reward is the opportunity to interact with the students. “Being a mentor has brought me the opportunity to watch these

students over the short period of time, blossom into confident contributors to the world outside of Skule. I am blown away by their successes, both in engineering and in the rest of their external pursuits,” states De Julio.

Fellow mentor **Randy Sinukoff** (Chem 8T2, MAsc 8T4) also finds the opportunity to engage with students enriching. “It fulfills me to ‘see the light go on’ in the person I am speaking with. It doesn’t matter what the topic is. It is great to see someone else lock into something I say and make it their own,” he says.

Peter Nobel (Chem 8T9) has found his own “lights go on” as a mentor. “My experience of being a mentor has certainly made me more self-aware. When a student asks me a direct question, it gives me the chance to reflect on my experience and really think about my answer,” he says.

Noble also appreciates the insight it gives him on the current curriculum and concerns of future engineers. “I’ve taken some of the topics that have arisen through the mentor program back to management group discussions. If you want to be an employer of choice for students, you need to know and understand what students are concerned about and value,” Noble explains.

For **Ian Chown** (Chem 0T3), his motivation to become a mentor was driven in part by his wish for more mentorship while an undergraduate student. “I think that my initial excitement was due to the fact that I wished I would have been able to participate in such a program when I was in school. Being able to talk to someone in the work force is great counterpoint to the academic work which, as a student, can feel insulated from the ‘real’ world,” he explains.

Recent graduate **Derek Chan** (Chem 0T9) returned to “Skule” this fall to serve as a mentor. As a student, Chan explains that “the thought of a mentor never crossed my mind, and boy do I regret it. If I did have someone to bounce my thoughts or concerns off of, I may have been able

to make more well-informed decisions in my life.”

De Julio offers the following advice to anyone considering becoming a mentor: “You just might find someone in whom you see some of yourself so many years ago, and be able to share what you’ve learned along the way in order to help them avoid some pitfalls and make even greater use of the opportunities ahead.”

De Vuyst agrees. “The program is an excellent opportunity for students to see what lies before them after they graduate.”

To become involved in the Skule™ Mentorship Program, contact Megan Murphy at meganm@ecf.utoronto.ca.

Q&A with Dr. Marino Xanthos

Dr. **Marino Xanthos** (Chem MASc 7T1, PhD 7T5), a professor in the Otto H. York Department of Chemical, Biological and Pharmaceutical Engineering at the New Jersey Institute of Technology, was awarded the 2010 Heinz List Award by the Society of Plastics Engineers (SPE) this fall. Xanthos was recognized for his work that has helped polymer engineering advance as an academic discipline. INTERFACES asked Xanthos to reflect on his over 40 year career and the challenges that lay ahead for the plastics industry.



Q: What was the path that took you from graduate studies in Toronto to the New Jersey Institute of Technology?

A: Following graduation, I joined Marietta Resources International as Manager of R&D and Technical Services. It had just opened a processing plant of Suzorite mica in Boucherville,

Quebec. I was involved in research for new applications of high aspect ratio mica flakes in polymeric and inorganic matrices. I then joined Stevens Institute of Technology as a research Professor and Director of Research of the Polymer Processing Institute where I was involved in both generic and contract research. In 1995 I joined the New Jersey Institute of Technology and continued my research with graduate students on multicomponent systems that now included pharmaceutical and biomedical applications.

Q: You hold five U.S. patents and have published more than 250 journal articles and conference publications. That must keep you very busy. What do you do in your spare time?

A: There is always time to travel, listen to music, and go to the theater.

Q: Reflecting on your time studying at the University of Toronto, what’s the one lesson you use most often?

A: Following the path of my MASc and PhD advisor, who had significant industrial experience prior to joining U of T, I developed early in my career an interest in both academic and industrial types of research. This led to my broad exposure to the concerns and challenges facing the industry and my better understanding of the ways that industry is looking at cooperative programs with universities.

Q: What’s the most pressing challenge the plastics industry faces in the future?

A: Industry needs to more aggressively address environmental issues. This include recycling, particularly of thermosets and crosslinked polymers, the development of plastics from renewable resources, the control of emissions during processing, and safety and health issues related to certain additives (e.g., nanoparticles, PVC stabilizers, BPA, etc.)

Lights, Camera, Chemical Engineering

As part of its continuing effort to attract the best and brightest students to our graduate programs, the Department has commissioned new videos that promote graduate studies in chemical engineering and some of our associated research fields.

Produced by Lithium Studios of Toronto and Los Angeles, the videos feature interviews with students and faculty members discussing their research and experience in the Department.

“Unfortunately, and in spite of our wish for the contrary, everyone who might be interested in studying in our Department isn’t able to visit us in person,” explains Professor **Vladimiro Papangelakis**, Graduate Coordinator and Associate Chair of the Department, who commissioned the videos. “Through these videos, which we stream on our website, we can connect with prospective students virtually. They can now see and hear what life is like in the Department. More importantly, they can get a feel of working, researching and interacting with our faculty and fellow students; they can get a feel of our values,” he adds.

To view the videos, visit www.grad.chem-eng.utoronto.ca

Q&A with Ya-Huei (Cathy) Chin and Arun Ramachandran, Chemical Engineering’s newest faculty members.

The Department is pleased to welcome two new faculty members. **Arun Ramachandran** obtained his PhD from Notre Dame University and his undergraduate degree from the University Institute of Chemical Technology, Mumbai. He joined the Department in January 2011.

Cathy Chin, who is completing her PhD at the University of California, Berkeley, completed her Bachelor and Master degrees at the University of Oklahoma. She will join the Department in May

2011. INTERFACES asked both to tell us a bit about their research, what brings them to Toronto and how they plan to cope with Canadian winters.

Cathy Chin

Q: If you were sitting on an airplane and had to explain your research to the person next to you who knew nothing about chemical engineering, what would you say?

A: I design solid materials for catalyzing the chemical transformation of renewable feedstocks. These processes harvest chemical building blocks from plants rather than the conventional fossil fuel and turn them into chemicals, fuels, and energy. When carried out efficiently, the technology enables our society to live a sustainable and affordable lifestyle.



Q: What drew you to the University of Toronto?

A: I knew that I wanted to teach. At first, the University with its diverse student body appears to be a place where I can carry out my endeavor. After I arrived for my interview and had a chance to teach a class and interact with the students from the Department, I immediately felt that I had found a home where I would have the privilege to influence the bright and inquisitive individuals from all around the world. I am very excited about becoming a part of the Department and looking forward to learn and grow with students and fellow faculty members.

Q: How are you preparing for Toronto winters?

A: I have to be honest here, I am not sure anyone can prepare for Toronto winters, especially me because I grew up in a tropical country and have spent the past five years in California. How about trading in my dance shoes for ice skates and mastering “Figure Eights” on ice? Even better, inventing a compact microreactor powered coat equipped with automatic temperature control? I was involved in a research program that develops portable fuel processors to supply power for night vision goggles and other gadgets for foot soldiers. A similar invention on a heated coat is much needed for me to survive my first Toronto winter in real snow!

Arun Ramachandran

Q: If you were sitting on an airplane and had to explain your research to the person next to you who knew nothing about chemical engineering, what would you say?

A: How would you like the oil in your mayonnaise to separate from the water? Or the ‘active material’ in your shampoo or fabric softener to float up to the top of the container? Can you imagine how difficult it would be to clean up oil spills if



little droplets of oil in the oil-water emulsion did not coalesce to make big ones? Did you know that the needles in blood glucose detection kits cannot be made smaller, even though this would mean lesser pain for the patient, because then the blood would never reach the analysis chamber? The fact is that suspensions (mixture of one material in another) like mayo (mixture of oil in water), fabric softeners (mixture of soft particles called vesicles in an aqueous medium) or blood (mixture of cells in plasma) are ubiquitous, but

the basic knowledge that governs their behavior and therefore, allows their tuning for specific functions, is still lacking. The focus of my research is to establish relationships between the makeup of a suspension and its properties. We are currently dealing with such diverse problems as adhesion of biological cells to surfaces in flowing conditions, study of the relationships between structure and function of biological cells (which may yield understanding for diseases such as multiple sclerosis), prolonging or breaking the stability of emulsions, transport of concentrated particulate suspensions in molding processes and in the oil industry, and improving the shelf life of products such as fabric enhancers, shampoos, etc., in the detergent industry.

Q: What drew you to the University of Toronto?

A: The diverse capabilities and backgrounds of the faculty members in the Department, the availability of almost any equipment you can think of, and the willingness of faculty to share infrastructure, attracted me greatly to this Department. Such an environment is conducive to bringing experts in different fields to work together on problems whose solutions can strongly impact industry and society. I am eagerly looking forward to collaborations with my colleagues here.

Q: How are you dealing with Toronto winters?

A: If you happen to see a figure completely covered from head to toe making a dash towards the Wallberg building even on a relatively benign winter day, there is a good chance that it is me! I have to admit that even though I have spent five years in a chilly place like Notre Dame, I am still getting used to cold weather. I come from a warm place in India—Mumbai.

Looking Back, Building Forward

After almost a decade as Chair, **Doug Reeve** reflects on the challenges faced, the contributions made and the community fostered in the Department of Chemical Engineering and Applied Chemistry.



Professor Reeve (far right) with faculty and staff members at the 2008 spring convocation where Professor Don Mackay (centre) was presented with an Honorary Degree.

As I come to the end of my second and final term as Chair, I find myself reflecting on the past nine-and-a-half years in the life of the Department of Chemical Engineering and Applied Chemistry. It has been a period of considerable change and renewal as we have responded to new developments in science and new demands from society and our profession.

In doing so, we have strived to remain rooted in three key concepts that I think define this Department and are the reason for our continued success: challenge, contribution and community. This is a place of challenge; it is not an easy place, we challenge ourselves to high levels of productivity and excellence. We challenge our students to learn and we expect our students to

challenge us. As individuals, we aim to make a contribution to the world, to make the world a better place and as a Department, it is central to our mission. And finally, this is a learning community that is collaborative and has a great spirit.

Allow me to provide you with a few examples from the past ten years as we've sought new challenges, found new ways to contribute and further developed our community.

Biology in Chemical Engineering

One of the most extraordinary developments in science over the last decade has been the explosion of research and information on the human genome and, more broadly, in the area of genomics and proteomics. Our Department, for many years, has been deeply engaged in the use of biological sciences, particularly medical sciences as related to tissue engineering. Professor Michael Sefton continues to lead in this field and has been singularly responsible for the tremendous development of tissue engineering at the University of Toronto as a world-recognized centre. Over the last few years Michael has been recognized for his leadership with major international awards. Also among our other award-winning faculty in the realm of tissues engineering are Professors Molly Shoichet and Milica Radisic. These Chemical Engineering professors have developed programs for using chemistry and chemical engineering knowledge to build new human tissues and have exceptionally productive collaborations with medical scientists and practitioners.

Over the last ten years we have seen spectacular growth in our Department in another realm of biology applied to chemical engineering in the area of environmental bioprocesses and biofuels. Professor Emeritus David Boocock has been successful in transforming his pioneering laboratory work on conversion of waste fats and oils into biodiesel and has seen full commercial

operation arise from his research. Professor Elizabeth Edwards has been engaged in the application of microbiological cultures for remediation of contaminated ground water and has seen her now-commercial KB1 anaerobic culture applied in hundreds of sites to eliminate chlorinated solvent contaminants. Emerging from our work in environmental bioprocesses is a new centre: BioZone, A Centre for Collaborative Bioengineering. This centre will be the gathering point for many of our professors in Chemical Engineering and for colleagues in other engineering and science disciplines. Two of our recent hires, Professors Emma Master and Krishna Mahadevan have boosted our capability in this area. The nine BioZone professors collectively have won over \$40 million in research funding including over \$4 million for renovation and expansion of the Wallberg building. The expansion will accommodate two new research professors: Alexei Savchenko and Alexander Yakunin. Their internationally recognized work on proteomics and enzymology and their team of researchers will occupy the new space within the next year.

Curriculum and Teaching Renewal

There have been several major trends in development in the Department over the last ten years in curriculum and teaching. Design in the undergraduate curriculum has grown in importance with the establishment of the Engineering Strategies and Practice courses in first year studies. This award-winning curriculum development has transformed the first year experience. Professor Mark Kortschot was one of the key partners in this development. Process safety is a critical element in design of chemical engineering systems and Senior Lecturer Graeme Norval has brought a great strength to this new aspect of our curriculum. For many years we have had an outstanding capstone design course

led by Professors Levente Diosady and Don Kirk. It now serves as a model for other Departments who are developing similar courses.

Our Department has led the way for years in the area of communications in undergraduate teaching and Senior Lecturer Chris Ambidge designed and implemented portfolio courses for second and third year students in Chemical Engineering. These portfolio courses allow us to identify and recognize students whose communication skills are outstanding and also to identify students whose communication skills need remedial action.

We have done much over the last ten years to dramatically increase the quality of our laboratory facilities. In partnership with the Department of Chemistry, new labs have been established in the Lash Miller building. Our second year students have the benefit of these first rate teaching environments. We have invested significantly in the continuing renewal of the unit operations laboratory. Under the leadership of Senior Lecturer Paul Jowlabar and Professor Paul Szabo, we have established a new multi-scale reactor system with state-of-the-art process control.

Our Department has played a key role in the establishment of new Faculty-wide minors for undergraduate engineering students. The Bioengineering Minor, the Sustainable Energy Minor and the Environmental Engineering Minor are very popular with students across the Faculty and particularly with our own Chemical Engineering students. Enrollment of Chemical Engineering students in these three minors are: 78, 62 and 71, respectively. There are new minors under development that our Department is also playing a significant role in: the Engineering Business Minor, the Financial Engineering Minor and the Global Engineering Minor. As to future developments, we are undertaking to strengthen our professional, course-based Masters of Engineering offerings with particular emphasis on environmental consulting practice.

Research Intensity

Over the past ten years the Department has invested significantly in its ability to increase focus on, and productivity in, research. We have won substantial funding from the Canada Foundation for Innovation for investment in research infrastructure with Professor Chuck Mims winning two substantial CFI grants to establish the Surface Interface Ontario. Professor Elizabeth Edwards won two rounds of funding from CFI for BioZone development. Professor Greg Evans has won substantial funding for the establishment of the Southern Ontario Centre for Atmospheric Aerosol Research (SOCAAR) and, most recently, for the establishment of the multi-disciplinary Canadian Aerosol Research Network (CARN). Each of our Assistant Professors has competed well for research infrastructure funding from CFI as part of their initial start-up.

As part of our mission to improve research infrastructure, we have undertaken extensive renovations within the Wallberg building and now can count 120 rooms renovated in the past ten years. We also improved our processes for administrative support of research. We have hired administrative assistants to provide support (to Assistant Professors in particular) for formulation of research grant applications and for administration of research grants.

University Industry Partnership

One of the continuing trends in academic research funding is the requirement by government for co-funding by industry partners. Our Department has a long history of success in the University-Industry partnerships with the Pulp and Paper Centre being a widely appreciated model for research consortia. The Centre for Management of Technology and Entrepreneurship (CMTE) led by Professor Emeritus Joe Paradi is another fine example of



Members of the Board of Advisors in 2002. (L to R) First row: Ted Cross, Nadine Riley, Claire Kennedy, Michael Charles. Second Row: Levente Diosady, Doug Reeve, Michael May, John Voss, Raminder Gill, David Colcleugh, Larry Seeley.

University-Industry collaboration. CMTE is the heart of our financial engineering enterprise with Joe and Professor Yuri Lawryshyn doing excellent work with their three bank partners and Bell Canada. Not surprisingly the banks are very interested in our students; they hire them for their excellent analytical and problem solving skills and hire them in numbers.

Another important link between the Department and Industry is our Board of Advisors. Formed eight years ago, the Board is populated with alumni from a range of industrial and business sectors. They regularly offer us their excellent counsel on linking our efforts to industrial needs.

Leadership Education in Engineering

The Leaders of Tomorrow Program started in Chemical Engineering in 2002. We can take pride that this initiative led the way not only in the Faculty but in the country. In 2006 the program won \$1 million over five years from the Provost to expand to Faculty-wide. I am very proud to co-lead this effort with Professor Greg Evans. Another important contributor to this Faculty-wide effort is Leadership Development

Professor David Colcleugh, a triple alumnus of our Department and former CEO and Chairman of DuPont Canada. Dave developed the first course on leadership and leading. This initiative will continue to grow with the establishment of the new Institute for Leadership Education in Engineering (ILead). I am very proud to have been named the Director of ILead. This will be part of my ongoing work after I step down as Chair.

Reflections

Reflecting on the great opportunity I have had over the last 9½ years as Chair, I am profoundly grateful for the opportunity to make a contribution to a wonderful institution and to a wonderful group of colleagues. Our faculty and staff create a working environment that is committed to excellence, collegiality and making a difference. I feel privileged to be a part of it.

The greatest joy that I have had has to do with the outstanding faculty that we have been so fortunate to hire over the past ten years, namely Roger Newman, Edgar Acosta, Milica Radisic, Krishna Mahadevan, Emma Master, Tim Bender, Yuri Lawryshyn, Alison McGuigan, Arun Ramachandran and (arriving May 1, 2011) Cathy Chin. I am also delighted to have been a party to the hiring and development of Senior Lecturer Graeme Norval who has contributed immeasurably to the high quality of our teaching, our curriculum development and has demonstrated his superb leadership and managerial skills as Associate Chair Undergraduate.

In closing, let me say that it has been my great privilege to serve as Chair. I look forward to the continuing growth, development and great success of the Department under new leadership. Regardless of who occupies the Chair's office, I know that we are a collaborative community that will always pursue new challenges and seek new ways of contributing to the world.

Alumni

William Dimma (Chem 4T8) was awarded the Engineering Alumni Medal by the Engineering Alumni Association of the University of Toronto. Dimma was recognized for his contributions to society and business, especially his commitment to corporate governance and his dedication to improving the practice of directorship. The Engineering Alumni Medal is the highest honour awarded by the Engineering Alumni Association and recognizes individuals who have demonstrated superior accomplishments and are outstanding role models for engineering students.



EAA President Claire Kennedy presents William Dimma (centre) with Engineering Alumni Medal, joined by EAA Award Committee Chair Barry Adams.

An invention by **Jeffrey Karp** (PhD 0T4)—duct tape for doctors—was named one of *Popular Mechanics*' "20 New Biotech Breakthroughs That Will Change Medicine." Karp is the director of the Laboratory for Advanced Biomaterials and Stem Cell Based Therapeutics at the Harvard-MIT Division of Health Sciences and Technology.

Donald King (Chem 5T0) was awarded the Malcolm F. McGrath Alumni Achievement Award by the Engineering Alumni Association of the University of Toronto. The award recognizes

contributions of personal service to the Faculty, the University or to the community. King was recognized for his tireless organizing of alumni events and spearheaded a fundraising campaign to help build Ajax House, part of Innis Residence on the St. George Campus.



Dr. Michael May (Chem 9T1, PhD 9T8) and **Sandra Odendahl** (MAsc 9T0) were both awarded the Arbor Award by the University of Toronto Alumni Association. The Arbor Awards recognize alumni who volunteer their time and energy in support of the University. May has been a member of the Chemical Engineering Board of Advisors since its inception in 2002. He has been a strong advocate for improving the links between academic research and industrial development. Odendahl has served on the Board of Advisors since 2005, where she has contributed her passion for chemical engineering, concern for environmental issues and her professional experience in banking and finance.



Department Chair Doug Reeve (far left) and Former Chair and Dean Michael Charles (far right) congratulate Sandra Odendahl and Michael May.

Dr. Joseph C. Paradi (Chem 6T5, MSc 6T6, PhD 7T5) was inducted into the University of Toronto's Engineering Hall of Distinction. He was recognized for the practice, study and teaching of engineering entrepreneurship. The Engineering Hall of Distinction is an assembly of extraordinary alumni, selected for membership by their peers for their lifelong accomplishments.

Dr. Phillip "Rocky" Simmons (Chem 6T4, MSc 6T5, PhD 6T8) joined 16 other members of the U of T community who were inducted as Fellows of the Canadian Academy of Engineering. Simmons serves on the Department's Board of Advisors and is President and CEO of Eco-Tec Ltd. Simmons was also presented with the Leaders of Tomorrow Alumni Award by students of the Department of Chemical Engineering and Applied Chemistry at the Department's 25th Annual Dinner.

Dr. Bert Wasmund (PhD 6T6) was named a 2011 inductee to the Canadian Mining Hall of Fame. Inductees are honoured for making outstanding lifetime achievements to the benefit of the Canadian and/or world mineral industry.

Faculty

Professor Edgar Acosta was honored by the American Oil Chemists Society (AOCS) with their Young Scientist Research Award for the significant and substantial research contributions he has made to the AOCS' division of surfactants and detergents.

Professor D. Grant Allen (Chem 8T1) has been named a Fellow of the Engineering Institute of Canada in recognition of his service to the profession and to society. Allen is a former President of the Canadian Society of Chemical Engineering.

Professor Will Cluett and three other colleagues from the Faculty of Applied Science and Engineering, were named Fellows of the American Association for the Advancement of Science. Cluett is currently serving as Chair of the Division of Engineering Science. He was recognized for "distinguished contributions to process control and design, and to undergraduate engineering education through curriculum design and innovation."

Professor Elizabeth Edwards was awarded the Kalev Pugi Award from the Society of Chemical Industry Canada for the development of KB-1, a microbial culture that dissolves chlorinated solvents commonly used in dry-cleaning and industrial degreasing. The award recognizes specific research and development projects that have been performed during the previous 10–15 years.

Professor Greg Evans (Chem 8T2, MSc 8T4, PhD 8T8) won the Medal for Distinction in Engineering Education from Engineers Canada, the national body of professional engineers. Evans joined five other recipients from the University of Toronto, who were honoured by Engineers Canada at their Awards Gala in Vancouver, B.C. in May 2010. Evans also won the 2010 St. Lawrence Section Outstanding Teaching Award from the American Society for Engineering Education. This award, which focuses on outstanding classroom performance, recognizes teachers of engineering and engineering technology students.

An invention by **Professor Mark Kortschot**, namely a skateboard that you can fit in a backpack known as Sole Skate™, was named one of the Top Ten Toys of 2010 by Time Magazine. This isn't the first recognition Sole Skate™ has received. It was named the 2010 Outdoor Toy of the Year by the Australian Toy Association and was also named one of the top finalists in

the “Fun and Sport” category for the Toy of the Year awards at the International Toy Fair in Nuremberg, Germany.

Professor Emeritus Donald Mackay has been awarded the Miroslaw Romanowski Medal from the Royal Society of Canada for scientific work pertaining to environmental problems. Mackay is Professor Emeritus at the University of Toronto and Trent University and Director Emeritus of the Canadian Environmental Modelling Centre. He is the originator and developer of an environmental modeling system, known as the “Mackay Models,” which provides valuable insight into the behaviour of chemicals in the natural environment, as well as a framework for future projections into their spread.

Professor Roger Newman has been named Fellow of the Electrochemical Society (ECS). The fellowship recognizes individuals who have significantly contributed to electrochemistry and solid-state sciences and are active in the affairs involving the Electrochemical Society.

Professor Emeritus Joe Paradi (Chem 6T4, MASc 6T5, PhD 6T8) was a recipient of the Ontario Engineering Medal for Entrepreneurship, which is presented by Professional Engineers Ontario and the Ontario Society of Professional Engineers. Paradi—a well regarded entrepreneur himself—teaches engineering economics and entrepreneurship courses while serving as the Director of the University of Toronto’s Centre for Management of Technology and Entrepreneurship. He joined four other colleagues from U of T who were recognized at the Ontario Professional Engineers Award Gala.

Professor Doug Reeve (MASc 6T9, PhD 7T1) has been named the 2010 recipient of the R. S. Jane Memorial Award by the Canadian Society of Chemical Engineering (CSCHE). It is the premier award presented by CSCHE and recognizes

an individual who has made an exceptional achievement in the field of chemical engineering or industrial chemistry.

Students

Six students graduating from the Department of Chemical Engineering and Applied Chemistry were presented with Student Life Catalyst Awards during the Department’s pre-convocation lunch in June 2010. The awards recognize graduating students who have made outstanding contributions to the life of the Department through their leadership and volunteer activities. The winners were:

Graduate Student Life Catalyst Award

M. Douglas Baumann (PhD 1T0)

Winnie Chan (MASc 1T0)

Undergraduate Student Life Catalyst Award

Piotr Maka (Chem 0T9+PEY)

Mohan Pandit (Chem 1T0)

Murray Pinto (Chem 1T0)

Angelina Mun Yee Tan (Chem 0T9+PEY)



(L to R): Doug Baumann, Winnie Chan, Angelina Tan, Piotr Maka, Mohan Pandit and Murray Pinto.

Third year student **David Castelino** (Chem 1T2) was named one of Canada’s Top 20 Under 20™ by Youth in Motion, a national charitable organization that develops and implements dynamic programs for youth. Castelino was recognized for his development of a thin-film

solar tile, which uses solar paint made from organic dyes to convert the sun's rays into energy. Castelino also received the Duke of Edinburgh's Gold Award in the presence of Queen Elizabeth II and Prince Phillip during their visit to Toronto in July 2010. The award recognizes youth for their volunteerism, physical activity, developing practical and social skills.

Taryn Davis (Chem 1T0) has been named one of 13 inaugural winners of the Student Engagement in the Arts Awards, which is presented by the University of Toronto Arts Council. Davis, who graduated from the Department in June and is currently pursuing a Master of Engineering degree in the Department of Civil Engineering, was recognized for her leadership of the Skule Arts Festival.

PhD student **Nilima Gandhi** received the 2010 Chris Lee Award for Metals Research by the Society of Environmental Toxicology and Chemistry (SETAC). The award is sponsored by the International Copper Association and recognizes a graduate student or recent graduate who has focused on research related to the fate and/or effects of metals in the environment.

Erin Kim (MAsc 1T0) and **Devang Odedra** (MAsc 1T0) were among the recipients of the 2010 Gordon Cressy Student Leadership Award. The award recognizes their outstanding contributions to the University of Toronto community and beyond.

Three undergraduate students returned from the 2010 Canadian Society of Chemical Engineering Conference in Saskatoon, Saskatchewan with prizes in their hands. **Mercedeh Modir Shanechi** (Chem 1T1) and **Sami Khan** (Chem 1T1+PEY) placed first and second in the Robert G. Auld Student Paper Competition, while **Albert Huynh** (Chem 1T2) placed first in the Reg Friesen Oral Paper Award Competition.

PhD student **Ilya Perederiy** has won the 2010 Gordon Ritcey Hydrometallurgy Award. The award is given by the Hydrometallurgy Section of the Metallurgical Society of the Canadian Institute of Mining, Metallurgy and Petroleum to the best student in the field of hydrometallurgy in Canada.

Katrina Rossall (Chem 1T3) was presented with the Jane Clement Chamberlin Memorial Award at the 2010 Varsity Blues Achievement Awards Ceremony. Rossall is a member of the Varsity Blues Women's Volleyball team. The award recognizes a student who displays excellence or exceptional promise in academics and athletics.

Ph.D. student **Jessica Virdo** (Chem 0T7+PEY) has been named a recipient of the prestigious Vanier Canada Graduate Scholarship (Vanier CGS). The scholarship—which is often compared to the Rhodes and Fullbright scholarships—awards doctoral students \$50,000 per year for up to three years in order to allow students to focus on their studies instead of their finances during their graduate research work. The Vanier CGS aims to attract and retain world-class doctoral students at Canadian universities thereby making Canada a global centre of excellence in both research and education. Virdo's research involves the design and development of new materials for organic solar cells.

PhD student **Laurence Yang** won the Best Presentation in Systems Analysis in Biology and Medicine at the American Control Conference. Yang was recognized for his presentation entitled "Designing Experiments from Noisy Metabolomics Data to Refine Constraint-Based Models."

Births

Angelika Duffy (BioZone Laboratory Manager) and her husband Patrick welcomed their son Quinlan Christopher Duffy on February 27, 2010.



Dr. Erik Kremer (EngSci 9T5, PhD 0T6) and his wife Zoë Purdy welcomed their third daughter Lucy Madeleine Purdy-Kremer on July 13, 2010.



Dr. Nick Senior (Post-doctoral Fellow) and his wife Mirnaly Saenz welcomed son Oliver Emil Senior on September 29, 2010.



Julia Tsai (Chem 9T9, MASC 0T2) and her husband Jerry Chwang (Mech 9T6, Mech MASC 9T9) welcomed their son Ethan Chwang on February 14, 2010.



Marriages

Abeer Chowdhury (Chem 0T2) and Ashik Momen were wed in Buffalo, New York on March 22, 2008.

Helen Li (Chem 0T1+PEY) and Alan Tsang (WDW BSc 0T2) were wed in Hong Kong on November 7, 2009.

Angela Tran (EngSci 0T5, MASC 0T7, PhD Candidate) and Jeffrey Kingyens (EngSci 0T5+PEY, ECE MASC 0T8) were wed at the Knox College Chapel on the University of Toronto campus on October 2, 2010.

Obituaries

Ronald John Broger (Chem 5T4, OISE/UT MED 7T5) passed away peacefully on July 17, 2010. He worked for several years as an engineer before entering the field of education. He is the former principal of Don Mills Collegiate Institute and George S. Henry Academy. He is predeceased by his wife Rita Desjardins and missed by his five children, six grandchildren and one great-granddaughter.

Carl C. Gryte (Chem 6T4, MASC 6T6) passed away on December 31, 2010. He was a Professor Emeritus of Chemical Engineering at Columbia University, where his research focused on polymers. He is the namesake of two awards presented by the Columbia University Department of Chemical Engineering: the Carl C. Gryte Undergraduate Award, which is presented annually by the to a Senior who shows the greatest promise for service to Chemical Engineering; and, the Carl Gryte Fellowship, which is awarded to needy and deserving graduate students. He is missed by his wife Carol and his four children.

H. A. G. (Tony) Kingsmill (Chem 4T1) passed away peacefully on May 19, 2010. After service in World War II with the Royal Canadian Electrical and Mechanical Engineers, attached to the 14th Canadian Armoured Regiment, Kingsmill worked for Alcan for 27 years. He is missed by his wife Tee, his two children, three grandchildren and one great-granddaughter.

Irving H. Spinner (Chem 5T1, MASC 5T3, PhD 5T4) passed away on January 5, 2011 following a brief illness. He had just turned 88. He joined the Department of Chemical Engineering and Applied Chemistry as an Assistant Professor in 1958 and served as a faculty member until his retirement in 1988. Among his many contributions was his active participation in the Chemical Engineering Research Consulting Limited (CERCL) consulting group. He was also a founder and a Director of Eco-Tec Incorporated. He is missed by his wife of 65 years, Irene, and his three sons and four grandchildren.

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.

January 1 to November 30, 2010

Harold L. Aronovitch	Khizar Hayat Khan	Dorothy Shoichet
Peter J. Aust	Teresa K. Kita	Randy J Sinukoff
Najwa Azer	Linda Kocur	Arlene S. Smith
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John A. Carnduff	Khaled A. Mahdi	Hugh B. S. Williams
Frederick J. Carter	Antonio Masella	David Gordon Wilson
Pietro Chiefari	Michael H. May	Robert Wilson
E. B. (Ted) Cross	Theodore B. Metzging	Gordon Kai Leung Wu
Lorne Cutler	Peter Wayne Midkiff	Zhiwei Zhang
Claudio D'Ambrosio	Ronald Miki	
Sonia De Buglio	Bruce M. Millar	
P. David Douse	Scott T. Mills	
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Join us for the 26th Annual Chemical Engineering Dinner

Friday, March 18, 2011
Colony Grande Ballroom
89 Chestnut Street
Reception: 6:00 p.m.
Dinner: 7:00 p.m.
Cost: \$50/ticket



- Toast the accomplishments of Professor Doug Reeve as he completes his term as Chair of the Department
- Mix and mingle with classmates
- See your former professors
- Celebrate the current success of the Department

Learn more at www.alumni.utoronto.ca/chemengdinner2011



San Francisco Skule™ Alumni Event

Tuesday, February 22, 2011
San Francisco Marriott Marquis
55 Fourth Street
Cost: Free

Join us for the first Annual San Francisco Engineering Alumni Event. Dean Cristina Amon will host the first ever Engineering Alumni event in the Bay area. This event will coincide with the 58th Annual IEEE International Solid-State Circuits Conference. All alumni in the area and those attending the Conference are welcome!

For more information or to RSVP, please contact Sonia De Buglio at (416) 946-8143 or sonia@ecf.utoronto.ca

Skule™ Kids March Break Event for Children of Alumni

Tuesday, March 15, 2011
8:30 – 4:30
Cost: \$25

Staying in town but still want an adventure? Join us on this day-long journey as we explore everything from

Engineering Design to Biomedical Engineering! The March Break Event is for students in grades 1 to 12 and is open to the children of Skule™ Alumni. This day is themed to provide fun, interactive and grade-specific activities in different areas of engineering, science and technology.

Registration is limited so enroll early. To register please visit: www.outreach.engineering.utoronto.ca

Spring Reunion 2011

May 25 – 29, 2011

Visit www.springreunion.utoronto.ca for the latest information and registration details. Plan to attend the Chemical Engineering Alumni Lunch and Tour.

Saturday, May 28, 2011
Undergraduate Common Room (WB 238)
200 College Street
12:00 – 2:00 p.m.
Cost: Free

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