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**Alumni & Industry Magazine**

Chemical Engineering & Applied Chemistry  
University of Toronto

Volume 9, Spring 2012

**Industrial Water**



Chemical Engineering & Applied Chemistry  
**UNIVERSITY OF TORONTO**

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**Message From the Chair**

# Industrial Water — The Next Oil

“We are well positioned  
to educate people and  
deliver solutions to solve  
‘the next’ problem.”



As the new Chair of the Department of Chemical Engineering & Applied Chemistry at the University of Toronto, I am delighted to take this opportunity to speak about environmental sustainability, a multi-disciplinary issue where our ChemE community needs to play a leadership role.

Although the world today is faced with serious economic concerns, it's essential that we continue to place the environment and sustainable processes at the forefront; all other options are 'unsustainable.' Our Department has a unique and critical role to play in this area given the importance of chemical and biochemical transformations that occur at the molecular, catalyst/cellular, reactor, process and global length scales. We are well positioned to educate people and deliver solutions to solve 'the next' problem.

Climate change, environmental impact and scarcity of resources, such as the long-term availability of water ('the next oil'), need to remain in the forefront. Many alumni, faculty members and students from the Department of Chemical Engineering & Applied Chemistry are already leading by example. The knowledge and processes generated through their research coupled with the education they receive and deliver make it possible for others across the globe to coordinate more effective and efficient responses to critical world issues.

In this edition of *Interfaces* – which has been redesigned to better showcase the achievements of our friends, classmates and colleagues – you will meet members from our community-at-large who are committed to preserving our water supply. Several countries (developed and developing) understand the need to address this matter aggressively but much still needs to be done – especially as it relates to industrial water consumption and treatment processes. The people you will learn about in this publication clearly illustrate the problems at hand and how they plan to resolve them.

I hope you enjoy this edition of *Interfaces*. I look forward to meeting and hearing from many of you, as you help our Department maintain and enhance its impact on the next generation.

**Grant Allen**

(ChemE 8T1, MASC 8T3)

# Plant Design Dives into the Athabasca Oil Sands Tailings Ponds

“Nothing worth doing is ever easy. This is precisely the case in Plant Design.”

Every year fourth year students from the Department of Chemical Engineering & Applied Chemistry participate in Plant Design – a course that bridges their entire education by having them address a real issue and come up with viable solutions.

As part of Plant Design this year, three groups were asked to propose remedies for the Athabasca Oil Sands Tailings Ponds. Currently there are over 170 km<sup>2</sup> of tailings ponds in the Athabasca area alone. These pond waters are contaminated with both organics and inorganics, which have negative connotations on the surrounding environment and populations.

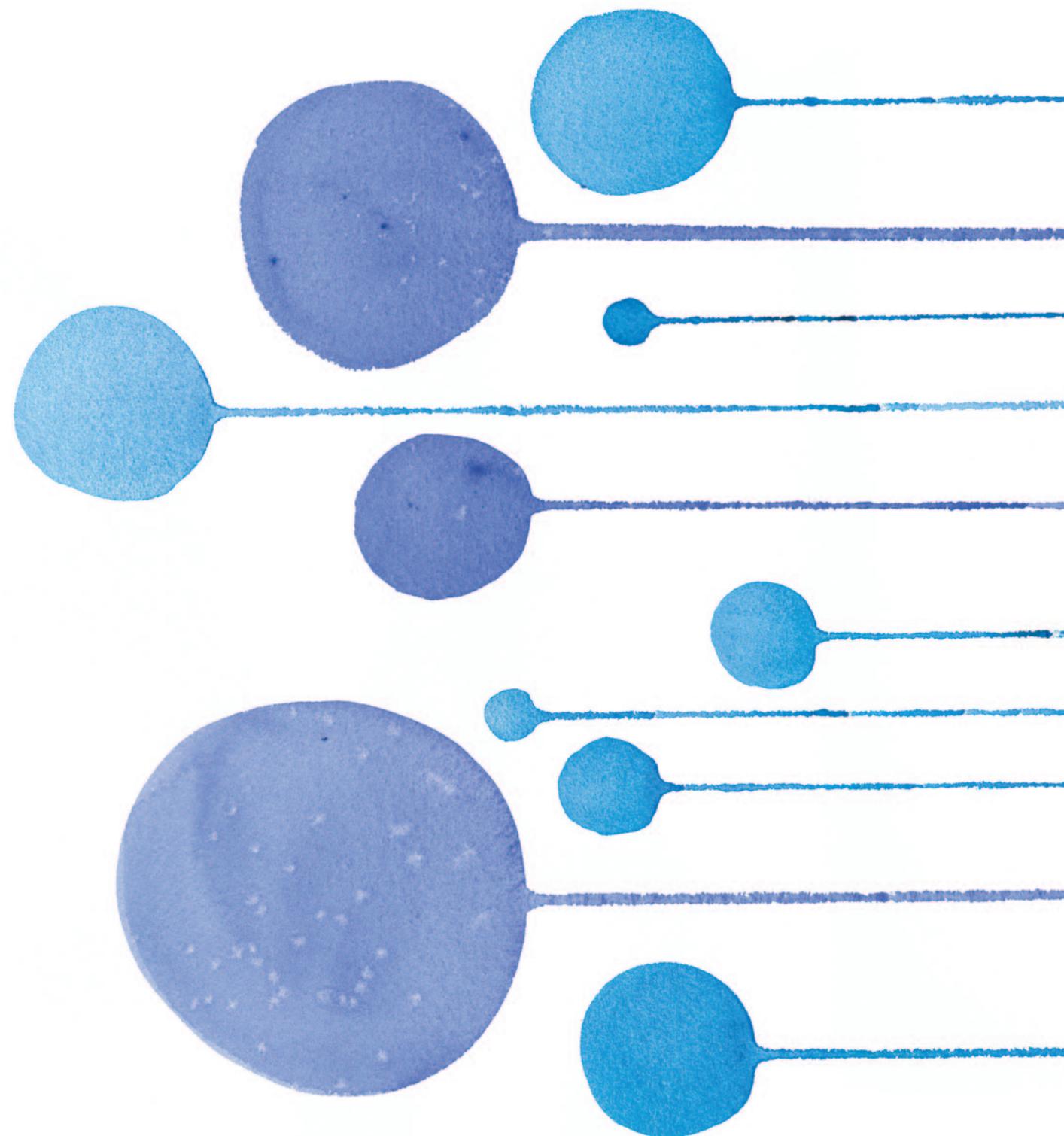
Two of the three groups came up with innovative solutions that are now being further investigated by the University of Toronto’s proposed Centre for Water Innovation (*see page 7 for more information about the Centre*).

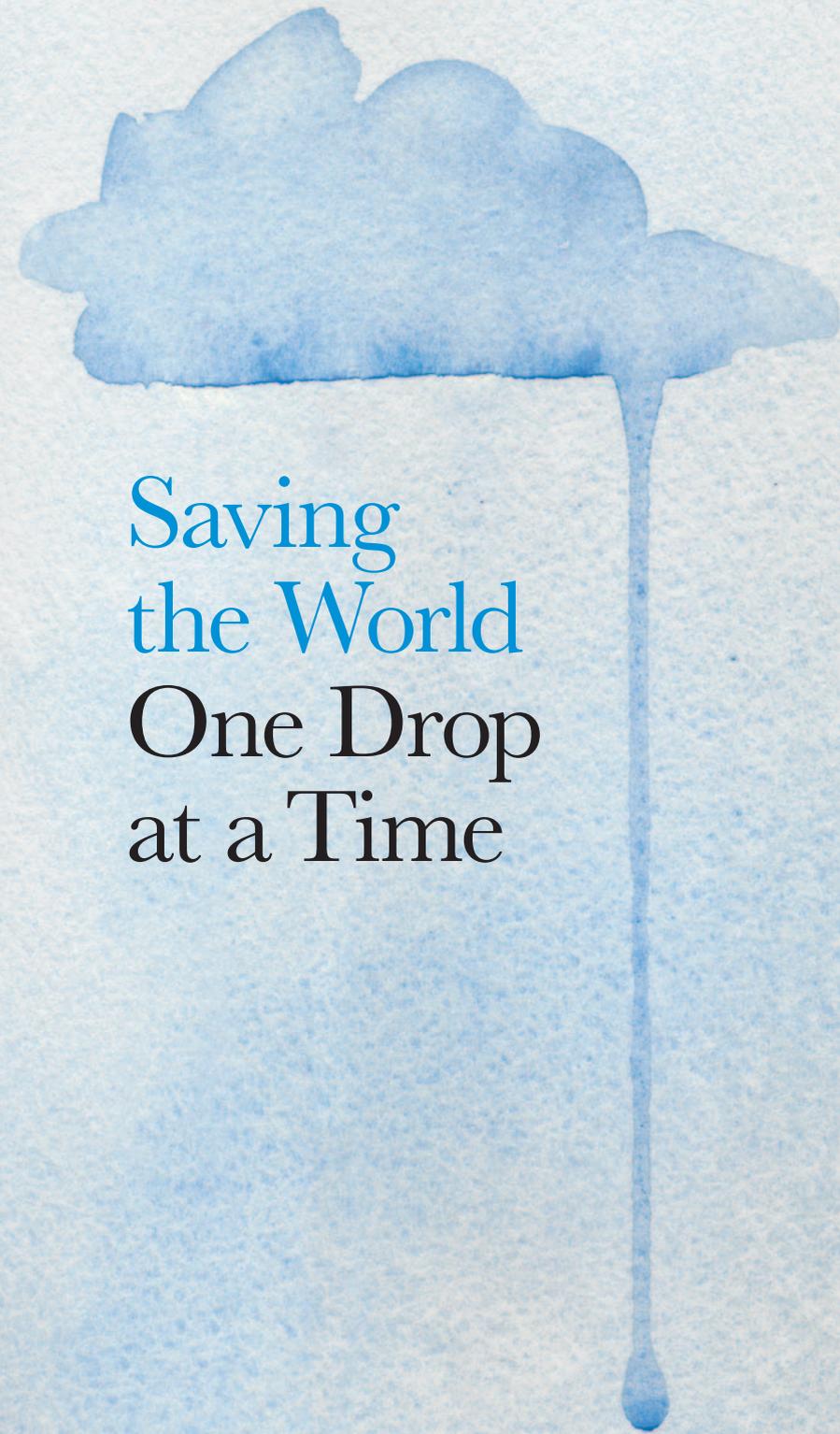
**Kelly Bryck, Rehana Kazi, Carlotta Peticone, Sean Salonga** and **Basil Wadi** recommend using the winter temperature in Alberta to freeze shallow ponds of tailings water. As this freezing occurs, contaminants remain

in the liquid layer and a relatively pure ice layer forms. The contaminated liquid bottom stream is removed and sent to a novel deep shaft oxidation process developed by **Melissa Battiston, Adam Dwyer, Yin Liu, Jozef Maka** and **Tasmia Tabassum** – their process incorporates (1) an electrolysis unit to generate molecular oxygen at depth so oxygen is fully dissolved without producing a liquid-gas interphase barrier for oxidation; and (2) an appropriate pH level to prevent scaling and sedimentation. The top ice layer will melt in the spring and become clean water for use by petroleum refineries. The combined solution of these two groups is highly sustainable since most of the energy requirements are met by harnessing natural processes.

Plant Design gives graduating students the context they need to go out into the professional world of engineering with confidence and competency.

“Nothing worth doing is ever easy. This is precisely the case in Plant Design. We faced daily challenges yet with a topic so interesting and relevant to all Canadian engineers, we were given the opportunity to truly put all of our previous learning experiences to the test,” says Bryck. **i**





# Saving the World One Drop at a Time

## Department News

Water is industry's most important fluid. It helps transport materials and energy; separates chemicals, minerals and fuels; and purifies reactants and products. Many water centres exist in the world, but few focus on industrial needs.

A group of professors across the Faculty of Applied Science & Engineering at U of T are looking to develop a Centre for Water Innovation (CWI). The Centre would provide the science, technology and training for industry to be able to operate sustainably with minimal adverse water impact for the environment and society.

In Ontario and across the globe, the water requirements for industry are particularly challenging. First, the consumption of water in industry is ten times greater than municipal and agricultural needs; therefore, the discharge is also greater. Second, the level of purity required is more stringent than for drinking or agricultural water. Minerals present in drinking water cause scaling, plugging, corrosion, heat transfer losses, membrane fouling and salt generation that are the bane of industrial water usage. Two of the most significant contaminants that need to be addressed are particulates and soluble salts.

As an example, CWI would develop advanced technology that modifies nanoparticles held in water by electrostatic forces and by Brownian motion so that they can be easily removed from their aqueous environment. Advanced process water technology would allow greater water recovery and reuse, and would support initiatives for improving water sustainability.

To address soluble salts, new approaches such as forward osmosis, electrochemical deionisation, and electrolyte modification using micelle formation would be developed, tested, modeled and economically evaluated by CWI. Ionic membrane technology and water softening strategies are the traditional methods used. However, their cost-effectiveness are major limitations.

The group spearheading the creation of CWI is made up of 21 researchers with 14 coming from the Department of Chemical Engineering & Applied Chemistry (*see list below*). The lead on this initiative is Chemical Engineering Professor **Don Kirk** who believes new paradigms for industrial water treatment technologies are essential to create a clean environment and adequate water supply for all. **i**

### ChemE Professors

Edgar Acosta  
Grant Allen  
(ChemE 8T1, MASc 8T3)  
Levente Diosady  
(ChemE 6T6, PhD 7T2)  
Elizabeth Edwards  
Ramin Farnood (PhD 9T7)

Charles Jia  
Don Kirk  
Yuri Lawryshyn (PhD 9T7)  
Charles Mims  
Roger Newman  
Vlad Papangelakis  
Arun Ramchandran  
Steven Thorpe (cross-appointed)  
Honghi Tran (PhD 8T2)

# Q & A

## Catching up with Jeanette Southwood



**Jeanette Southwood** (ChemE 8T6, MASc 8T8) is an award-winning engineer and a Principal at Golder Associates Ltd – a global, employee-owned firm of almost 8,000 around the world. Golder provides consulting, design and construction services connected to the earth, environment and the related areas of energy.

For more than 20 years, Southwood directed and participated in numerous projects related to the sustainable revitalization of urban communities, including contaminated sites and brownfields redevelopment, strategy development, risk assessment and risk management plans for a wide variety of clients. Now, one of her key roles at Golder is Global and Canadian Sustainable Cities Leader, working with team members from around the world. Her job includes identifying opportunities, bridging multiple disciplines and stakeholders and leading international collaborations. Southwood recently took time out of her busy schedule to reflect on her education and career path.

**Q: What was your area of research as a grad student at the Department of Chemical Engineering & Applied Chemistry?**

My graduate thesis was in both chemical engineering and environmental engineering – the development of mathematical models to predict what happens to organic chemicals when they are released in the aquatic environment when the source of the chemicals is a film floating on a body of water. These models were among the first to use spreadsheet capabilities to enhance prediction of the fate of pesticides and oil spills.

**Q: I understand you work at Golder Associates Ltd. Please describe your role there and how your education at U of T prepared you for it.**

I'm Golder's Global and Canadian Sustainable Cities Leader. The Sustainable Cities teams are multidisciplinary and work across many sectors including transportation, energy and power, real estate, land development, finance, insurance and legal, manufacturing, infrastructure, oil & gas and mining. One area of team focus is the strategic integration of global innovation and knowledge into effective, reliable and economical solutions for public and private sector clients.

My education at U of T provided me with a strong technical background and professional network, as well as exposure to cutting-edge thought and a global perspective. My graduate thesis professor was Donald Mackay, now a Professor Emeritus, a recipient of the Order of Ontario and an Officer of the Order of Canada. His research group was relatively large and multidisciplinary, and networked with organizations around the globe. In addition, the Department of Chemical Engineering & Applied Chemistry brought

in business leaders to conduct some of our undergraduate courses and broaden our horizons even further.

We were encouraged to have a broad perspective and to combine the pursuit of excellence with camaraderie and collaboration. Having such a foundation has influenced me throughout my career and influenced what I looked for in a workplace environment. As a Principal at my firm, I'm one of the senior owners. Part of our company's vision is to have the freedom to excel, the knowledge to find the answers and the passion to make a difference. I can see some parallels between that vision and the approaches of those I encountered during my education at U of T. In addition to Professor Mackay – Professors William Burgess, Douglas Reeve (MASc 6T6, PhD 7T1), Jane Phillips (ChemE 5T3), Wan Ying Shiu, Sally Paterson, Joseph Paradi (ChemE 6T5, MASc 6T6, PhD 7T5), Andrew Szonvi and many others had approaches I admired.

**Q: Describe your career path and the steps that led you to Golder. Also, what are some of your most valued achievements?**

After finishing my MASc from the Department of Chemical Engineering & Applied Chemistry, a fellow grad student from the Department referred me for a contract position at the City of Toronto's Environmental Protection Office. This was my first water-related job; I assessed bottled water quality and the purification methods used in home water treatment systems. When I finished my contract with the City, another one of my grad colleagues recommended me for a consulting position and I've been in consulting ever since.

You asked me about some of my most valued achievements – I would say that some of them are collaborating with colleagues on projects that have helped our clients meet or exceed their goals. Being a mentor and seeing others succeed has also been very important to me. On the technical side, for many years, I was a collaborator with the Canadian Environmental Modeling Centre. At my company, I have been honoured to receive a Golder Associates President's Award, which recognizes outstanding contributions to corporate success and strategy. Outside of Golder, I've been president of a charity and have co-founded a foundation. I received the Professional Engineers Ontario (PEO) Engineering Medal in the Young Engineer category a number of years ago and also received a City of North York (now the City of Toronto) Award of Excellence. Because of the volunteer work that I do for PEO, I received the Province of Ontario Volunteer Service Award and was also made a Fellow of Engineers Canada. I've been fortunate in my education and career – volunteering is a way for me to give back to the community.

**Q: On the topic of water, why do you think it's such a hot topic?**

We see in the news how severely we can be affected by water issues, for example, drought, floods, health impacts and famine. By 2050 it's expected that 70% of our world's population will be urban. Water and the decisions made about water resources and water management are integral not only to the sustainability – environmental, social and economic – of our urban populations and populations outside our urban centers, but also to humanity's survival. It's intimately tied to energy, land use, food security, waste, the extraction and management of our natural resources, as well as governance, politics, peace and conflict.

**Q: How does your current work relate to water?**

Water has been a part of my work since my graduate thesis and my first job after graduation. Key areas for me have been water quality, human and environmental health, and water's role in urban revitalization and densification. My firm was recently honoured for business leadership in water management and recognized for projects that have involved water stewardship, groundwater protection, managing water supply, sustainable urban water management, managing water impacts for the oil & gas and mining sectors, and identifying the vulnerability of water and water resources to climate change. We've also developed tools for our clients to help them make decisions surrounding these topics.

A recent award-winning innovation of ours is a tool to support decision-making called GoldSET, Golder's Sustainability Evaluation Tool. A new module for GoldSET focuses on wastewater treatment technology selection and optimization. GoldSET is a flexible platform that can also support high-level strategic decision making. Decisions about water need to consider all aspects of sustainability – environmental, economic and social – as well as technical aspects and governance.

**Q: What are you working on now?**

In my organization, I have global, national and local leadership roles. I lead our Global and Canadian Sustainable Cities teams, which has me interacting with colleagues all over the world. I'm also supporting the integration of a new firm into our organization following a 2011 merger and I'm supporting the GoldSET team. I'm currently a Board member for the Ontario Environment Industry Association (ONEIA) and I'm on the Canadian Brownfields Network (CBN) Board. I also volunteer on PEO's Awards Committee. I'm maintaining my connection to U of T by lecturing at the graduate level. **i**

# Good Water is Good Business for Uof T Alumni

“It’s one of the fundamental requirements for the well-being and continued development of our society, so getting good, clean water, and using it effectively is tremendously important.”

Two men who graduated from the Department of Chemical Engineering & Applied Chemistry at U of T, **Phillip Simmons** (ChemE 6T4, MSc 6T5, PhD 6T8) and **John Bianchini** (ChemE 8T5), have shown that employee loyalty and excellent individual performances over the long haul can pay huge dividends.

Both men are Chief Executive Officers of their respective companies and have developed international reputations for their companies’ water management programs.

Phillip Simmons – Rocky to most – loves his job. “I’m anxious to get to work every morning, and I’m sorry to leave every night,” he says in a quick interview we’ve squeezed into a busy January morning. Most days are busy for Simmons, President and CEO of Eco-Tec Inc. Once a subsidiary of an automotive parts manufacturer, Eco-Tec is today a thriving international company that specializes in chemical recovery, biogas purification and water treatment and recycling.

Simmons, who joined WIX Canada in 1968 fresh out of his Chemical Engineering PhD, has been central to his company’s transformation. It was Simmons who led

a management buy-out of WIX subsidiary Eco-Tec in 1985 when the parent company was bought-out, and it is Simmons’ research at U of T, which remains to this day at the core of one of Eco-Tec’s foundational technologies.

Now known as Recoflo, Simmons doctoral work focused on reciprocating flow ion exchange, a water treatment process that represented a far more efficient and cost-effective alternative to traditional ion exchange systems. After the management buy-out from WIX, Eco-Tec’s team struck out on their own with water treatment as their bread and butter, and Simmons at their helm.

It was a shrewd move. Access to pure water is integral to industrial processes. An upstream supply of clean water minimizes operational challenges and risks, while the downstream recovery of wastewater and chemicals not only reduces environmental impacts, but contributes to the efficient use of scarce resources.

Demand for Eco-Tec’s products has been tremendous. Today, the company has over 2,000 systems installed in 58 countries. It has received a Canada Award for Business

An Eco-Tec Produced Water Treatment System, featuring SpectrumMicro Media Filtration and RecoPur Ion Exchange Softeners, for Seneca Resources heavy-oil production plant, in Lost Hills, California, USA.



Phillip Simmons and John Bianchini (from left)

Excellence and was named among Canada's 50-Best-Managed Private Companies. Simmons himself has been the recipient of numerous prestigious awards, including a recent K.Y. Lo Medal "for significant engineering contributions at the international level" from the Engineering Institute of Canada.

Hatch, another Canada-based, employee-owned engineering firm, with corporate offices in Mississauga and Oakville, is also among Canada's 50-Best-Managed Private Companies, and its CEO John Bianchini also transitioned seamlessly from his studies in U of T's Department of Chemical Engineering & Applied Chemistry in 1985 to his current role. "I graduated from the Department on a Friday and went to work with Hatch on the following Monday." That was 27 years ago. On January 1, Bianchini was elected Chief Executive Officer of the company, which has 10,000 employees in 65 offices around the world.

Hatch is an innovative technical and technology leader serving major clients on every continent. Founded in 1955, Hatch delivers process design for the mining and metallurgy, energy and infrastructure sectors.

Asked about the importance of industrial water processes, Bianchini observes enthusiastically, "It's one of the fundamental requirements for the well-being and continued development of our society, so getting good, clean water, and using it effectively is tremendously important."

For Hatch, water is an integral and growing part of the business, and client projects range from designing and building hydroelectric-generation facilities to large-scale water distribution systems. Hatch is a world leader in desalination, and municipal wastewater retreatment. One of their largest clients right now is Freeport-McMoran, whose Chilean copper mines depend on the steady supply of millions of gallons of water. It's a huge project that involves not only establishing desalination facilities at the coast, but also creating infrastructure to pump the water 130 km inland and then up a further 2.5 km to the high Andes.

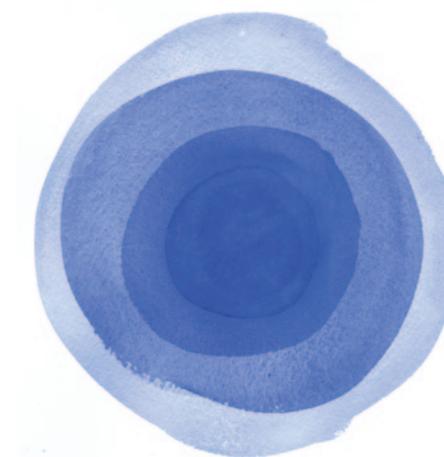
Hatch also conserves water. For example, in Alberta, current techniques for oil sands extraction rely on vast quantities of hot water, which is difficult to separate from residues downstream and is therefore difficult to recycle. That's especially problematic for operations in northern Alberta where water supplies are limited and monitored closely by the provincial government. That's why, in conjunction with N-Solv, an Alberta-based company, Hatch has developed a waterless process for oil extraction that relies on a solvent that can be recovered and reused. They're currently building a demonstration plant in the sands near Fort McMurray.

Bianchini's pride in Hatch's work is clear. "There is not another company in the world like Hatch," he says, calling both its employees and clients the best in the world. Bianchini and other top managers at Hatch says its pride and enthusiasm led Hatch to be named among the 50-Best-Employers in Canada for 2012. Hatch's work has also been honoured repeatedly with 68 awards in eight years including the International Project of the Year Award (sponsored by the Project Management Institute) and the Waste Reuse International Award last year.

Simmons is just as proud of Eco-Tec. "We're great believers in sustainability. That's what we do," but he also believes that environmental efforts need to be rooted in profitability. "The trouble with mandating things is that some people will always try to cheat," he explains. Simmons argues that if companies and governments make money recovering chemicals and recycling, there'd be more motivation to participate in environmental processes.

It's this combination of reducing environmental impacts, alongside a commitment to financial sustainability that will help companies like Hatch and Eco-Tec continue to grow and thrive at the front lines of industrial innovation. **i**

# Honours & Awards



## Alumni

### Arbor Award

Elias Kyriacou (ChemE 7T6)  
Alexander Pathy (ChemE 5T5)

### CSCHE Process Safety Management Award

Della Wong (ChemE 8T4)

### EAA Malcolm McGrath Award

John Voss (ChemE 8T2)

### Induction into the Canadian Academy of Engineering

John Bianchini (ChemE 8T5)  
David Colcleugh  
(ChemE 5T9, MASC 6T0, PhD 6T2)

### Presidential Early Career Award

Ali Khademhosseini  
(ChemE 9T9, MASC 0T1)

### The Engineering Institute of Canada K.Y. Lo Medal

Phillip (Rocky) Simmons  
(ChemE 6T4, MASC 6T5, PhD 6T8)

## Faculty

### Acta Biomaterialia Gold Medal

Michael Sefton (ChemE 7T1)

### Canada Research Chair

Milica Radisic

### EAA Hall of Distinction

Doug Reeve (MASC 6T9, PhD 7T1)

### Fellow of the American Association for the Advancement of Science

Michael Sefton (ChemE 7T1)

### Induction into the Canadian Academy of Engineering

Elizabeth Edwards

### Minerva Canada Education Award of Honour

Graeme Norval  
(ChemE 8T3, MASC 8T5, PhD 8T9)

### Order of Ontario

Molly Shoichet

### PEO Gold Medal

Michael Charles

### PEO Young Engineer Medal

Elizabeth Edwards

The Chemical Institute of Canada Catalysis Award  
Charles Mims

The Professor Bill Burgess Teacher of the Year Award

Joseph Paradi  
(ChemE 6T5, MASC 6T6, PhD 7T5)

The Professor Diran Basmadjian Teacher of the Year Award  
Ramin Farnood (PhD 9T7)

The Society for Biomaterials Clemson Award  
Molly Shoichet

## Communications

Hermes Creative Gold Award in the web video category  
Grad Video

Hermes Creative Platinum Award in the e-newsletter category  
Chem Eng News

# Honours & Awards

## Students

### Accenture Scholarship

Sami Khan (ChemE 1T1 + PEY)

### Bert Wasmund Graduate Fellowship in Sustainable Energy Research

Brett Kamino (PhD Candidate)

### Chemical Engineering Plant Design Award

Xuan Cao (ChemE 1T1, MEng Candidate)

Amna Fiaz (ChemE 1T1)

Eric Giddings

(ChemE 1T0 + PEY, MASC Candidate)

Rosanna Kronfli

(ChemE 1T1, MASC Candidate)

Phillip Leibrecht

(ChemE 1T1, MEng Candidate)

Wei Ren (ChemE 1T1, MASC Candidate)

### CSCHE Student Chapter Merit Award

U of T CSCHE Student Chapter

### Edward Jarvis Tyrrell Fellowship

Lisa Melymuk (PhD Candidate)

Umme Salma Akhtar (PhD Candidate)

### Environmental Engineering Plant Design Award

Dan Jiang (ChemE 1T1)

Lingzhi Liu (ChemE 1T1)

Steven Palmer (ChemE 1T1)

Setayesh Shafiei-Monfared

(ChemE 1T1, MEng Candidate)

Amanda Sistilli (ChemE 1T0 + PEY)

Ming Po Wong (ChemE 1T1)

### Frances Bradfield Graduate Fellowship in Environmental Engineering

Azadeh Bagherzadeh (PhD Candidate)

Mohammad Islam (PhD Candidate)

Pooya Azadi Manzou

(MASC 0T7, PhD Candidate)

Maygan McGuire (PhD Candidate)

Ilya Perederiy (PhD 1T1)

### Gordon Cressy Award

Rosanna Kronfli (ChemE 1T1)

Maygan McGuire (PhD Candidate)

Angela Tran (MASC 0T7, PhD Candidate)

### Graduate Student Life Catalyst Award

Hooman Foroughi (PhD Candidate)

Lana Kwan (MASC Candidate)

### Helen L. Cross Memorial Award

Elizabeth Csaszar (PhD Candidate)

### Howard Rapson Prize

Yaldah Azimi (MASC 0T8, PhD Candidate)

Tasnuva Zakir (MASC 1T1)

### Irving O. Shoichet

#### Graduate Scholarship

Lorraine Chiu

(ChemE 0T7, MASC 0T9, PhD Candidate)

Karyn Susana Ho (PhD Candidate)

### Student Sustainable Energy

#### Plant Design Award

Shufrah Alam (ChemE 1T0 + PEY)

Xiaoxing Jin (ChemE 1T1)

Stephen Pinto (ChemE 1T1)

Yasmin Rage (ChemE 1T0 + PEY)

Sami Zakaria (ChemE 1T1)

### The Class of 5T9

#### Leaders of Tomorrow Award

Albert Huynh (ChemE 1T2 + PEY)

### The Professor James W. Smith

#### Leaders of Tomorrow Award

Nikita Desai (ChemE 1T3)

### The Troost Family

#### Leaders of Tomorrow Award

Nicole Go (ChemE 1T0 + PEY)

Saeed Kaddoura (ChemE 1T1)

Rosanna Kronfli (ChemE 1T1)

Mercedeh Modir Shanechi

(ChemE 1T0 + PEY)

### Undergraduate Student Life

#### Catalyst Award

Elvina Chow (ChemE 1T0 + PEY)

Nicole Go (ChemE 1T0 + PEY)

Parnian Jadidian (ChemE 1T1)

Saeed Kaddoura (ChemE 1T1)

Stephen Pinto (ChemE 1T1)

### Vanier Scholarship

Julie-Anne Gandier (PhD Candidate)

Malgosia Pakulska (PhD Candidate)

## In Memoriam

It is with regret that we have learned of  
the passing of the following ChemE graduates  
between September and December 2011

**Leslie Webster Shemilt** (ChemE 4T1)

December 25, 1919 – December 20, 2011

**William Kenneth Caldwell** (ChemE 5T2)

November 27, 1928 – November 11, 2011

**Marcus Avrin** (ChemE 5T1)

June 23, 1923 – November 4, 2011

**Wally Schwenger** (ChemE 5T3)

October 14, 1919 – October 31, 2011

**Maurice Kunstenaar** (ChemE 4T9)

February 7, 1927 – September 24, 2011

**William Earl Winslow** (ChemE 6T5)

October 1, 1936 – September 17, 2011

# Upcoming Events

[www.chem-eng.utoronto.ca](http://www.chem-eng.utoronto.ca)

## Lectures at the Leading Edge

### Beyond Conventional: Illuminating the Future of Water Treatment

Speaker: Karl Linden,  
University of Colorado at Boulder  
Wednesday, March 21, 2012

### Engineering and Preclinical Development of Human Enzymes for Cancer Therapy

Speaker: George Georgiou, UT Austin  
Wednesday, April 4, 2012

### Re-Inventing Urban Water Infrastructure

Speaker: Richard Luthy,  
Stanford University  
Monday, April 9, 2012

12:30pm – 2pm  
Wallberg Building  
(200 College Street), Room 116

For more information about  
Lectures at the Leading Edge, email  
[deborah.peart@utoronto.ca](mailto:deborah.peart@utoronto.ca)

## Spring Reunion 2012

### Class of 0T7 Reception

Thursday, May 31, 2012  
7pm – Midnight  
O'Gradys Tap and Grill  
(171 College Street)  
\$20 per person (includes one drink & appetizers)

### Classes of 9T7 & 0T2 Reception

Friday, June 1, 2012  
7pm – Midnight  
O'Gradys Tap and Grill  
(171 College Street)  
\$20 per person (includes one drink & appetizers)

### Class of 9T2 Reception

Friday, June 1, 2012  
7pm – Midnight  
Hart House, East Common Room  
\$30 per person (includes hors d'oeuvres)

### Engineering Lectures

Classes of 3T7, 4T2, 4T7, 5T2, 5T7,  
6T2, 6T7, 7T2, 7T7, 8T2, 8T7  
Saturday, June 2, 2012  
10:30am – 11:30am  
Sidney Smith Hall, Room TBA

### ChemE Lunch and Tour

Classes of 3T7, 4T2, 4T7, 5T2, 5T7,  
6T2, 6T7, 7T2, 7T7, 8T2, 8T7  
Saturday, June 2, 2012  
Noon – 2pm  
200 College Street, Room 238  
(Undergraduate Common Room)  
Lectures, Lunch & Tour are free

### Reception and Dinner

Classes of 3T7, 4T2, 4T7, 5T2, 5T7,  
6T2, 6T7, 7T2, 7T7, 8T2, 8T7  
Saturday, June 2, 2012  
6pm – Midnight  
Hyatt Regency on King Street West  
\$100 per person + cash bar

### Student Club Showcase

Saturday, June 2, 2012  
10am – 2pm  
Location TBD  
Come and see what the Student Clubs  
have been up to thanks to alumni donations

### Skule™ Kids

Saturday, June 2, 2012  
10:30am – 12pm, 12pm – 2pm  
Drop-off location is the lobby  
of the Galbraith Building  
(35 St. George Street)  
To register, visit [outreach.engineering.utoronto.ca](http://outreach.engineering.utoronto.ca)  
\$25 per child (includes lunch, materials and  
t-shirt for children in grades 1 through 8)

For more information about  
Spring Reunion, email  
[meganm@ecf.utoronto.ca](mailto:meganm@ecf.utoronto.ca)

