

The Civilian

One Department, Two Great Programs: Civil and Mineral Engineering / Issue 9 / September 2010

Inside the

Winner's Circle

Alumni, Students,
and Research





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Prof. Brenda McCabe, Chair

On March 4th, the CIV/MIN graduating classes received their iron rings. We topped it off with a light dinner for the recipients and their guests – it was a wonderful day. Several proud parents mentioned that the day had special meaning because they were able to give the ring to their son/daughter that day. They further remarked how the iron ring ceremony meant so much more to them the second time around.

It got me thinking – what do I remember about the ceremony? Sadly, very little.

One of the many pleasures of my job is to meet fellow alumni. The Alumni Dinner in February was a great success with again over 150 people in attendance. At the Spring Reunion on May 29th, CIV/GEO/MIN attendance blew away the other disciplines with almost 100 people attending the luncheon in the new structures lab, and 160 (of 400 total) attending the reception and dinner at the Hyatt Regency. It appeared that a good time was had by all.

Survey camp is in full swing as I write this. This year's curriculum has been modified slightly to include modules in which students learn first hand about:

Renewable Energy: taking solar observations to determine the efficacy of harnessing alternative energy sources;

Geotechnical seismic investigations for mapping the underlying formations; and,

Sustainable forest management and timber as an engineering material.

As far as September goes, we're expecting 141 CIV and MIN students in first year, and 149 in second year! While we're bursting at the seams, we are very fortunate to have students who are bright, enthusiastic, and motivated. This makes our jobs so much more enjoyable.

B McCabe

Winning Alumni

Nadine Ibrahim (CIV0T0) had just returned from a three-week holiday when she received a phone call from Nelly Pietropaolo, Director of External Relations in Civil Engineering, to congratulate her.

"I thought she was talking about my NSERC award," Nadine recalls with a laugh, referring to the three-year federal grant she recently secured for research in the development of an intercity greenhouse gas strategy.

But that's old news.

"It took a few minutes before we realized we were talking about two different things," she says, "and when I finally connected the pieces, I was shocked."

Nelly, after all, was calling about the Engineering Alumni Association's 7T6 Early Career Award, a prestigious recognition of outstanding work by a young engineer just 10 years out of Skule(TM).

Nadine's vision has always been grand. An active volunteer while here in Toronto, she finished a Master's degree at U of T just one year later.


Her passion for promoting engineering and the engineer's role in addressing issues related to climate change are exceptional.

What's even more surprising is she has done all this while having been abroad for most of this time, only recently returning to Canada after a six-year hiatus.

Basing herself in Egypt, she took on various international development projects with CIDA and the World Bank that, embedded with social and environmental development themes, helped build transportation, water and solid waste infrastructure in priority constituencies.

Now back in the office as an urban and environmental management consultant, Ibrahim works to ensure that technical solutions are integrated with culturally responsive and environmentally prudent techniques to accommodate physical uncertainties and provide sustainable development and design strategies.

The effort and drive shown by Nadine in these pursuits, and the dedication and commitment that she provides to her projects has provided inspiration and the basis for personal advancement for everyone around her.

Nadine will be rejoining the Department of Civil Engineering this fall, as she begins her Doctoral work with Prof. Chris Kennedy. 



Nadine Ibrahim (CIV0T0)

Congratulations also to:

Dawn Tattle (CIV8T5), winner of the 2010 7T6 Mid-Career Alumni Award

Manuel Fine (CIV5T2), inductee into the Engineering Hall of Distinction 2010.

This Year at Camp

Camp Still Vital in its 91st Year

Gull Lake Camp is a fabulous, unique, immersive hands-on learning experience available to our students. For the last 91 years, this unique site has enabled our students to develop technical skills and lifelong camaraderie.

Camp bridges classroom learning to experiential learning, allowing students to better understand environmental responsibility and engineering sustainability. At this time, Camp can accommodate neither our growing student population nor our exciting new curriculum.

The three aspects of this vision: building infrastructure, woodlot/wetland management, and sustainability programming are closely intertwined.

Plans for camp continue to make progress, although it has slowed over the summer. We hope to start detailed design in the fall, and expect to have fundraising in full swing in the next issue of the *Civilian* in Spring 2011.

Be ready for it!

In the mean time, I hope that you'll come to the 2010 Survey Camp Reunion on Saturday, Sept 18th.

Make sure that you admire the new sign as you drive in (thank you CIV9T8 (+PEY) for rebuilding it).

We are thrilled with our plans and look forward to providing the next 90 years of students an extraordinary learning experience that uniquely sets them apart as University of Toronto engineering graduates.

Please contact us directly if you have any comments or questions. We look forward to hearing from you.



You are invited to our 3rd Annual
CIV-GEO-MIN Alumni Dinner

Friday, February 11, 2011
Reception 6:30, Dinner 7:30
 Colony Ballroom
 89 Chestnut Street
 Toronto, ON



By the time you read this, David Ruggiero (ESC0T9) may have already acquired tenure.

Such is the case for our new Vanier Scholar, whose meteoric rise through the academic ranks has seen the recent graduate of the Engineering Science undergraduate program join the ranks of our Doctoral candidates here in the Department.

The ink was barely dry on his first Master's grades when news came that the federal government was funding his research for another three years. That wasn't surprising - public agencies have been clamoring to fund this outstanding young researcher for years.

Meet Our Vanier Scholar

David Ruggiero Wins "Canada's Rhodes"

What was amazing was the level: the Vanier Awards are, quite simply, the most prestigious scholarship program in the country, an ambitious new federal program aimed at attracting the world's best researchers to Canadian Universities.

"David is doing very well with his research," Prof. Evan Bentz (PhD CIV0T0) writes, obviously restraining himself. Indeed, Bentz and Ruggiero have much to be excited about.

"I think we are about to discover some interesting new science here." - Prof. Evan Bentz

The recent \$1.5 million upgrade of the Shell Element Tester (SET) in the Mark Huggins Structural Engineering Labs has transformed an already world-leading research unit into a centre capable of simulating, with amazing accuracy, the real-world operating conditions of today's reinforced concrete structures.

That includes the ability to closely examine the impact of seismic events and even explosions, as well as failure mechanisms that manifest only over protracted periods of time.

"I think we are about to discover some interesting new science here," Bentz said when asked about the upgrade work completed by MTS. "And we are more confident than ever in our ability to make highly accurate predictions of how long a bridge will last while in service."

David looks focused as he and a team of other researchers busily cast the first specimen to be tested this fall. His research will use the SET to analyze newly developed high-strength concrete materials and their performance under impact, earthquake and blast loading.

His work will help advance our understanding of the behaviour of reinforced concrete under dynamic loads – vital knowledge given our continued reliance on this material in the built environment. 🏠

David Ruggiero and other structures students cast his initial specimen in the Huggins Structures Lab this summer.

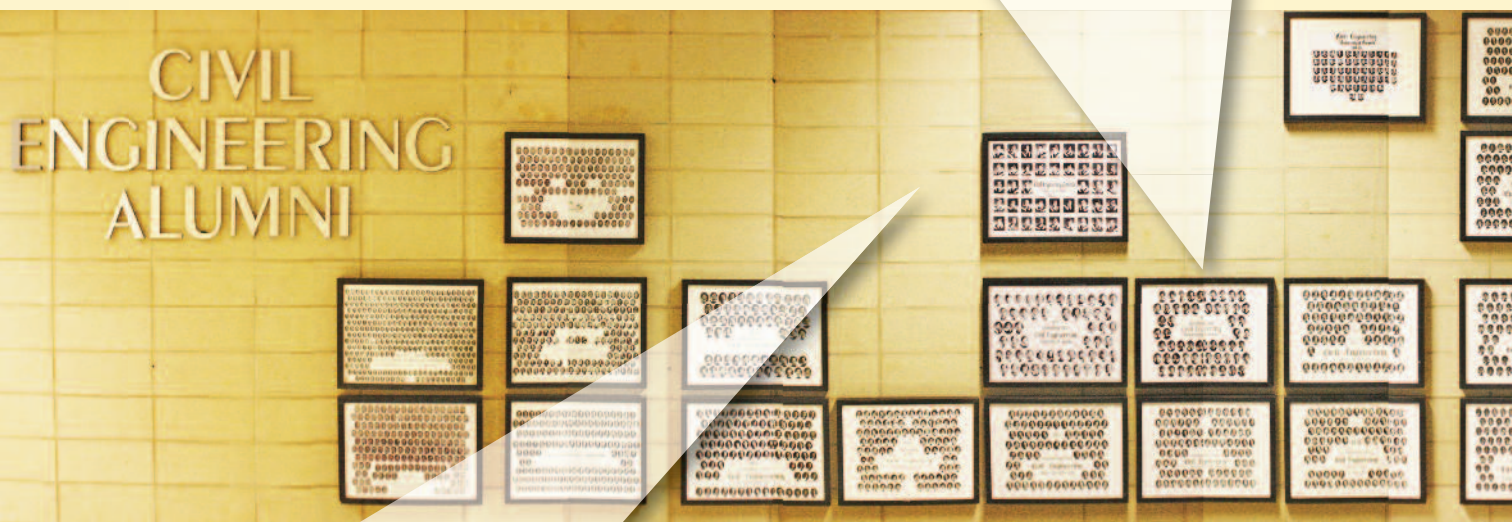


The Alumni Wall

CIV5T6

The Civil Engineering Class of 1956 created the 5T6 Civils Scholarship one year after graduation, and they have held a class gathering every year since then.

This coming year will mark their 55th Anniversary. Congratulations!



Missing Years

Can you help us track down class photos from:

- 4T5 and earlier
- 4T7, 4T8, and 4T9
- 5T3, 5T5 to 5T9
- 6T3, 6T4, 6T6, 6T8, 6T9
- 7T1
- GEO and MIN Classes

Please send your photos to us. We'll scan them, restore them, and send the originals back to you. See the back cover for our address.

CIV5T3 - CIV9T5

If we were the betting type, we'd pick our alumni to win every time.

But this year, we really did have the winners! We cleaned up at this year's Arbour Awards, with four winners from CIV5T3 to CIV9T5.

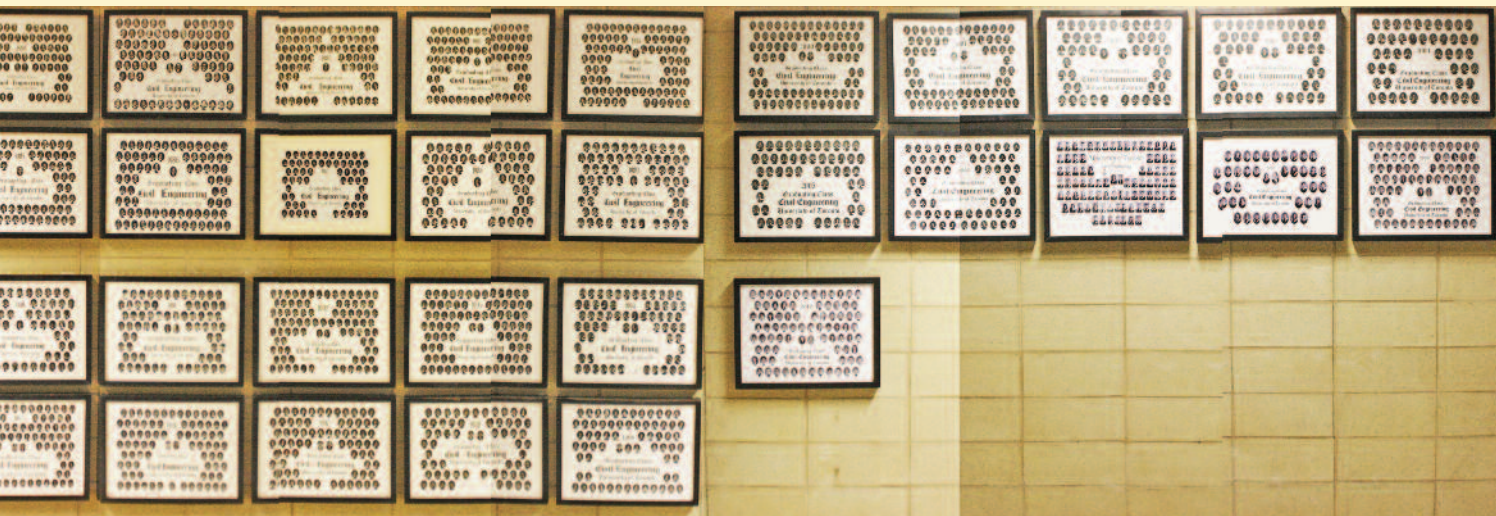
Look for full profiles in the next issue of The Civilian!

GEOs & MINs

We want to build you a historic alumni wall, too!

Please lend us your GEO and MIN class photos. We'll copy them and return the originals to you.

Once we gather a critical mass, we'll build the GEO-MIN Alumni wall in honour of these our great Programs.



GEO7T4

Ross Pitman (GEO7T4) has been the Chair of the Calgary Chapter of Engineering Alumni since 2005.

The Calgary Chapter gathers together alumni from all engineering disciplines for fun events, professional networking, and interesting alumni opportunities. It is the largest U of T alumni Chapter outside of Toronto.

Thanks to Ross' hard work and enthusiasm, the Calgary Chapter recently celebrated their Second Annual Gathering!

Welcome Home to GEMINI

How a Building Within a Building Could Cut Energy Use Dramatically

Prof. Kim Pressnail (CIV7T6) and his building science research group are feeling the urge to nest this fall.

Hot on the heels of media reports over our continued misuse of expensive non-renewable energy resources, the group, including researchers at the University of Toronto and

Ryerson University have partnered with the Ontario Power Authority Technology Development Fund to retrofit a forgotten century home on the U of T campus. But this isn't your typical "fixer upper."

The team projects that they'll be able to reduce the power consumption of the house by a factor of three when work on their GEMINI Nested Thermal Envelope Design (NTED)TM is complete.


The intent of the project, which is currently in its design phase, is to educate and inspire by demonstrating that this design approach is a cost-effective method of achieving superior energy performance.

"Through the use of twin thermal envelopes, one around the building core zone, and one at the building perimeter, we're really putting a building within a building," Kim explains. "The two systems are designed to control heat and air movement independently of one another."

The energy savings are realized by using the perimeter area as a temperature buffer.

In winter, for example, the lived-in core area could be kept at a balmy 20 degrees while the outer perimeter is allowed to drop to 5 degrees. In summer, the core could be kept at a similar comfortable temperature while the outside is allowed to rise to 35 or 40.

While layering is all well and good, further savings are realized using a sophisticated heat-pump system that recycles heat from the perimeter to the core and vice-versa, depending on the time of year and desired movement of energy. And it can all be done with the flip of a switch.

"Imagine having the low-energy switch in your home that could instantly cut your energy costs by a factor of three. That's where we are headed." 



Professor Kaiwen Xia and Hamza Saleem (MIN1T1) in the Rock Dynamics Lab.

Granite samples before and after impact (inset).

Breaking Ground

On a blazing hot day in late July, Professor Kaiwen Xia and Hamza Saleem (MIN1T1) seem not to notice the heat outside their basement lab. They stand huddled around a tiny piece of rock held firmly inside a metal apparatus.

The Professor backs away as both don safety glasses. A moment later Hamza pushes a button, and a sharp, loud cracking sound fills their ears as the rock disintegrates about the lab, the latest victim of their explosives and impact simulator.

The Split Hopkinson Pressure Bar (SHPB) is essentially a gun powered by compressed gas. The bullet, a 20lb steel rod, is capable of delivering a force of up to 20,000 psi, about the equivalent of 10 tonnes of dynamite.

Xia smiles as he picks up the rock fragments while another student diligently records data from the impact on a computer.

“We are using the data collected in these experiments

to determine the response of various engineering materials, like rock, to map predictable outcomes when exposed to sudden impacts.”

The research has the potential to inform the way we build vital infrastructure like roads, bridges, earthworks and buildings in areas susceptible to impact.

“These aren’t just war zones we are talking about,” Xia says. “We can help make industrial areas, tsunami zones, and other potentially volatile places people may live safer.”

Hamza has his own related project on the go. Funded partly by an NSERC Undergraduate Summer Research Award, his work in the lab utilizes the same gas gun device to analyze various types of crushed rock at mine sites to determine optimal crush density.

“My hope is that this research will help provide some options for mining companies looking to increase their efficiency and decrease their energy consumption.”



Building Hope

Eyes of Hope ensuring that Davis Doan's Vision Lives On



Sarah Bullick, Director of Annual Gifts with Habitat for Humanity Toronto, picked up her phone one cold afternoon in January 2009. On the other end of the line was a student. Quite matter-of-factly, he said he wanted to sponsor a home.

Such was the beginning of Davis Doan's (CIV0T7) relationship with Habitat for Humanity, one which has seen more than its fair share of triumph and tragedy over the last two years.

Habitat staff get many calls from people wishing to make donations, but Davis' vision was grand. He had a plan for an energy-efficient U of T Engineering Home, a place whose property could be purchased, designed, built and funds raised by Engineering student leaders.

The charity group he founded, Eyes of Hope, was looking for a major project, a tangible way he saw to give back to his community. He had been inspired by a build he had attended one year earlier.

"Last year, I had the chance to go into a Habitat for Humanity home and talk to a member family," he wrote on his website. "The smile on the mother's face was enough for me to know that I've made a difference."

While the plan to purchase a property was deferred due to logistical difficulties, Davis' vision endured. Eyes of Hope began fundraising in earnest, raising about one quarter of the \$80,000 required to fund a Habitat home.

He also helped usher in a unique partnership between the Department of Civil Engineering and Habitat Toronto, creating a summer internship position for a student interested in building and construction engineering.

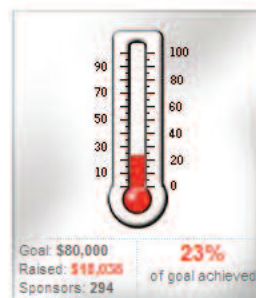
Dayoung Park, a third-year student in the Department, was the first intern employed through the program. She has just completed a summer term learning the fundamentals of layout design, construction management, quality control, and the building process.

Davis Doan passed away on May 20, but the Engineering home he envisioned will be built. The Eyes of Hope group continues to fundraise, having now received donations from over 400 individuals.

"I'm doing this because I want other students to have similar experiences," Davis earlier said. "I want other students to experience building a house with their own hands, to develop their leadership and communication skills, to make new friends, to have a project that they can call their own form and be proud of for a lifetime."

Davis was an inspiring student leader whose vision and impact cannot be reproduced sufficiently on paper.

Alumni are invited to join the Engineering home campaign. For more information, visit www.torontohabitat.ca/univtorengineering





Headed West

How Bernadette Ho (MIN1T1) Keeps Her Mine Running on Time

Bernadette Ho stands and smiles at the entrance of an open-pit oilsands mine located just outside of Fort McMurray, Alberta. After three years of classroom theory, she can't wait to put it to work.

Her job, part of her one-year Professional Experience Year placement, entails weekly updates on ore and waste inventory and the creation of a geological map of the mine site.

"The most important role I have is to work with the production specialists to plan shovel patterns and then communicate those plans to dispatch. We keep track of what needs to be mined, what has been mined, and how it will be extracted with the best possible grade."

By correlating a geological block model with what is seen out in the field, Bernadette can increase her mine's efficiency in both production and energy use.

"I try to go out into the mine once a week to see what is going on and try to correspond it to what I see in the computer database," she says.

The planning environment at such a large outdoor site is very fast paced because the geology and weather conditions cause plans to change within hours.

"It's an exciting department to work for because there is always something to do," she says, "but it's also challenging to get used to. There are deadlines to meet even though the mine conditions are always changing and everyone works together to make sure that any problem that arises is dealt with accordingly."

Teamwork is a crucial component in ensuring that priorities are managed and production is on schedule in a short term, daily, weekly and monthly time frame. Within short range planning, there are planners for roads access, drainage, ore and waste management.

Since Bernadette has been at the mine, there have been opportunities to learn about many areas including blasting and bench design.

"I would definitely recommend the PEY program because it is a great learning environment that exposes students to the many aspects of engineering work," she reflects. "Working in a mine for the first time and being away from home has also taught me many things about myself and the corporate environment."

Bernadette will be in Alberta until September, 2011.

Moving Mountains

Prof. Amer Shalaby on the World's Largest Transportation Project

The numbers are staggering.

That's the only way to sum up the project currently underway in Mecca, Saudi Arabia, which aims to see the large-scale revitalization of its Grand Mosque – the holiest site in Islam – complete by 2013.

Prof. Amer Shalaby has just returned from a year abroad in which he worked as part of a technical advisory panel to the government project – the largest urban transformation in modern history – and we sat down with him to get his take on the massive undertaking.

What is the current situation in Mecca?

The Grand Mosque in Mecca has a current capacity of about 600,000 people, and this falls well short of the current and projected demand on the site. Plans are underway to increase the capacity to 1.5 million people.

At peak times during the Haj and Ramadan, there are 300,000 people in the surrounding streets. A complex network of roads and buses exist, but these are not efficient.

There are nine huge housing developments underway with a capacity of 1 million.

What does the future hold?

There will be an even greater demand in the coming years as the number of Muslims is increasing. Mecca currently has a population of about 1.5 million people with 2.5 million visitors each year, and we expect this to grow to 3 million residents with over 3 million annual pilgrims by 2030.

Can you describe some of the plan and the challenges you face?

We are investigating the use of a large-scale gondola technology that could be put in place to ferry large numbers of people in addition to eight subway lines, high-speed rail and revamped roadway technology. The gondola system is a unique idea we are modelling that could be put in place in areas where there is no more space for surface or underground transit.

The city itself is in a valley and is largely surrounded by mountains. We have people coming from all over the world, so language and differing cultural norms will be a big challenge.

The majority of pilgrims are elderly visitors who may never have travelled on mass transit before or may have mobility challenges. We need to keep the holy sites open during construction, manage 40,000 workers, and do it all in about two years.



Cities and Drinking Water

Now More Than Ever, Water is an Urban Issue

When most people in Canada think about drinking water quality issues, they think of the developing world.

“Few people here think about water quality on a daily basis,” admits Prof. Ron Hofmann, a Professor in the Department of Civil Engineering at the University of Toronto. “For them, it’s invisible, underground infrastructure.”

But water matters.

“Water quality is something that we are lucky we can trust in this area, but when something goes wrong, people can die. Since water resources are something each of us uses daily, it’s hard to think of anything more important.”

Hofmann and a team of two other Professors, 17 research-stream students and several full-time research associates form the Drinking Water Research Group, a collaborative team of engineers and scientists that work toward developing technology to ensure that the most basic essential of life remains safe and reliable.

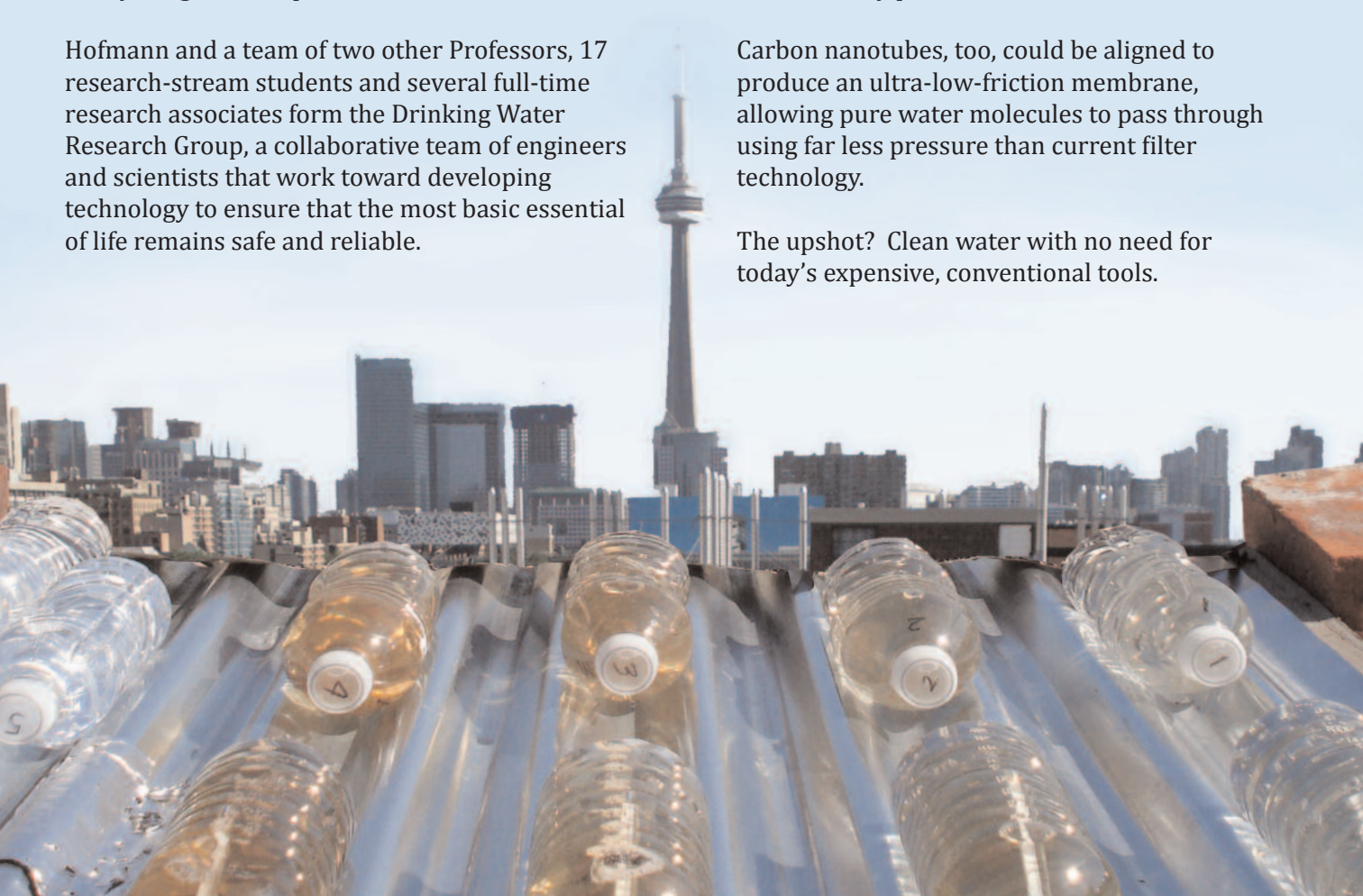
Safe water is the bottom line, and from a contemporary urban perspective, that means moving and treating the stuff in massive quantities. “The majority of energy used by municipalities goes toward water, for movement, treatment, or storage. The costs are huge.”

The Promise of Nanotechnology

“Nano will allow us to better harness natural sunlight to treat water.” Ron Hofmann predicts. “Materials begin to behave differently at the nano scale. Titanium dioxide, for example, starts to absorb visible light, which creates oxidants that could destroy pollutants.”

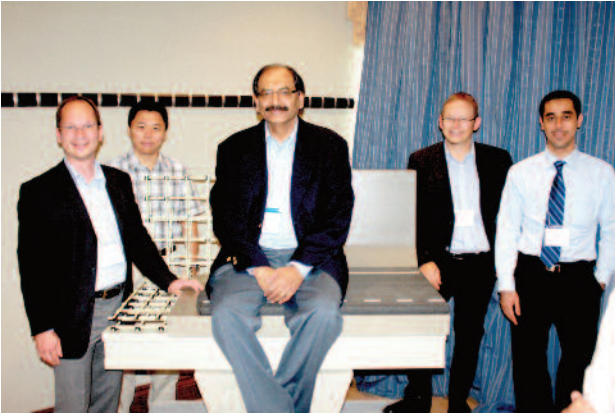
Carbon nanotubes, too, could be aligned to produce an ultra-low-friction membrane, allowing pure water molecules to pass through using far less pressure than current filter technology.

The upshot? Clean water with no need for today’s expensive, conventional tools.



Recent Conferences

Alumni and Industry Join Us for Two Structural Engineering Conferences



Fibre-Reinforced Polymers June 18, 2010

Prof. Shamim Sheikh and several graduate students recently played host to alumni and industry representatives for a one-day seminar on the possibilities that fibre-reinforced polymers have for future infrastructure projects.

“The ASCE has estimated that \$1.3 trillion will be needed over 5 years to bring U.S. Infrastructure up to acceptable levels,” Sheikh says, “and Canadian numbers are very similar.”

Fibre-reinforced polymers can offer an inexpensive, lightweight, and corrosion-resistant alternative to steel as a reinforcement for concrete structures.

The problem is, research into GFRP is lacking compared to steel.

The Structural Engineering Research Group is actively working to develop the much needed analysis procedures and design guidelines for these promising new materials.

Self-Centering Structures & Earthquake Engineering July 29-30, 2010

Prof. Constantin Christopoulos, his research group at the University of Toronto, and colleagues from Lehigh University, Princeton University, and Ecole Polytechnique hosted scholars and industry reps from around the world for a two day session on self-centering seismic-resistant structural systems this past July.

The group included members of the academic research community that have been working on the development of self-centering systems, practitioners who want to actually design these systems, and experts from various building code committees.

The breakout sessions focused on planning steps forward in the codification and broad application of these advanced steel structures and set targets for future research and development goals.



UnERD

Faculty Undergraduate Engineering Research Day Chooses Four CIV and MIN Students to Show Off Their Work

Justin Kwok (CIV1T1)

Justin spent the summer working with Prof. Matt Roorda in the Intelligent Transportation Systems Lab.

He undertook a comprehensive parking inventory in the Central Business District (CBD) in downtown Toronto, identifying signage issues, public and private parking lots, roadside space availability, and an analysis of average costs.

“The city has some funky signage,” he says with a laugh, showing a chart which makes clear the confusion caused by overlapping and redundant regulations.

“For example, in this area we have a no parking ordinance, which may confuse drivers because it is also a marked no stopping zone.”

His research may help city policy-makers determine ways to streamline regulations, but can also inform the way planners design whole neighbourhoods.

With the ITS lab at his disposal, the data Justin has collected will be used to model more efficient parking and loading bay strategies to limit congestion in dense urban centers.

Nick Yugo (MIN1T1)

Surayya Vohra (CIV1T2)

Surayya’s research with Prof. Susan Andrews in the Drinking Water Research Group centers around the use of ferrate as a novel drinking water treatment reagent.

The research is being used to investigate this as a means to reduce the formation of potentially toxic by-products formed in the normal chlorination process currently used to sanitize water.

Nick’s research is in the Institute of Biomaterials and Biomedical Engineering.

He spent the summer helping develop a novel way to safely deliver radiotherapy to irregular shaped cancerous brain tumors while protecting healthy tissue from the radiation.

Catherine Chen (Infra 1T1)

Catherine’s research with Prof. Constantin Christopoulos saw her developing a full-scale steel frame for the testing of a new cast steel energy-dissipating mechanism for the seismic protection of steel structures.

Catherine’s work will contribute to the experimental validation of this new protective technology.



Milestones



The Department is welcoming three new Professors to the ranks this fall.

Prof. Oya Mercan will be joining us from the University of Alberta. Oya specializes in structural dynamics and control/smart structures.

Prof. Khandker Nurul Habib (not pictured) works in the area of travel demand modelling and integrated land use/transportation modelling.

Prof. Oh-Sung Kwon will focus on seismic fragility of structures, soil-structure interaction, and geographically distributed pseudo-dynamic simulations.



We are very pleased to welcome all three to the Department and their respective research groups.



Members of UofT's engineering community have received six of nine national Engineers Canada awards for their contributions and achievements in engineering. **Professor Constantin Christopoulos** garnered the Young Engineer Achievement Award.

At an age when many researchers are just beginning their careers, Constantin Christopoulos is already recognized as a leader in his field. He has led development of a new damping system that significantly improves the response of high-rise buildings to wind and seismic loading. This system is expected to result in more cost-effective designs and increase the safety of our infrastructure.



Prof. Eva Kuhn was surprised earlier this year when the entire class of students showed up at her final tutorial to wish her well in her retirement.

Eva has been a vital part of the Department and has touched the lives of countless students since she began here in 1976.

We'll miss you, Eva!

Do you have a great story to share with us?

Send your Milestones to:

email colin@civ.utoronto.ca
phone (416) 978-0945
write Civilian Magazine
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 University of Toronto
 35 St. George Street
 Toronto, ON
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The Department wished **Ampy Pural** happy travels earlier this summer as we celebrated her wonderful 30 year career.

Ampy was the cornerstone of the department, working out of the Office of the Chair, and she is currently getting used to her much deserved retirement.



The University of Toronto hosted this year's **Canadian National Concrete Canoe Competition** at Marilyn Bell Park earlier this summer.

Congratulations to the winners of CNCCC 2010, École de Technologie Supérieure, and to all participating teams, for a successful competition. We would like to extend our sincerest thanks to the sponsors, volunteers, and participants who made this great extra-curricular event possible.



The Department celebrated the 91st anniversary of **Gull Lake Survey Camp** this year at the reunion held on September 18th.

If you've never been back, consider joining us next year for a great relaxing day by the water and a tour of all the new plans for the complex.



Prof. Jeff Packer has received the 2010 H.A. Krentz Award from the Steel Structures Education Foundation. The award is given to the researcher with the top-ranked proposal in the annual SSEF research grant competition.

Prof. Packer's research will investigate welded hollow structural section connections and assess current Canadian and American guidance on weld design.

Prof Packer also recently won a Research and Development Medal from the Ontario Society of Professional Engineers. Congratulations!



CIV-GEO-MIN Alumni Dinner 2010

You're Invited
CIV-GEO-MIN
Alumni Dinner

Friday, February 11, 2011
 89 Chestnut Street, Toronto

More Information:
www.civil.engineering.utoronto.ca/alumni

Upcoming Alumni Events

Civil-Mineral Engineering Career Fair

Represent your company and profession at U of T's largest
 Departmental Career Fair January 6, 2011

CIV-GEO-MIN Alumni Dinner

Join colleagues and classmates on February 11, 2011

Welcome to Skule™ Alumni/Recruitment Day

Engage with incoming students and promote CIV and MIN
 in our May recruitment events

Spring Reunion

Alumni from across the University reunite May 26-29.
 Honoured years ending in 1 and 6.

Survey Camp Reunion 2011 - 92 Years

September 17, 2011

Nominations

We invite nominations for the following 2011 awards:

- 2T5 early career award. To be nominated from classes 10 years out of Skule™ (0T1).

- 7T6 mid-career award. To be nominated from classes 25 years out of Skule™ (8T6).

Please contact Nelly at nelly@civ.utoronto.ca if you have a great candidate in mind!

In Memory

Michael LeGresley (CIV8T4)

Barry Smith (CIV5T6)

Kenneth Williams (CIV5T6)

David Rice (CIV9T7)

Davis Doan (CIV0T7)



Civil Engineering students gather on the steps of the Galbraith Building to celebrate Prof. Eva Kuhn's remarkable teaching career.

Stay in Touch

www.civ.utoronto.ca

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