

# INGENUITY

FACULTY OF APPLIED SCIENCE  
ENGINEERING NEWS  
SPRING 2013 / SUMMER 2013

**BUILDING ON TRADITION...  
THE SCHOOL OF ENGINEERING  
COMES OF AGE**

**ALPHA TECHNOLOGY AND  
CORVUS ENERGY TEAM WITH UBC FOR  
SMART GRID ENERGY STORAGE**



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

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# Dean's Message

Dear UBC Engineering alumni and friends,

Since my appointment as dean of the Faculty of Applied Science was announced last December, I have become increasingly excited about taking on this role. I was interested in the position initially because UBC — a tier-one, internationally recognized university with an outstanding reputation for engineering, medicine, business, law, arts and science — is the kind of institution whose activities can have real impact in the world. It will be my privilege to leverage my experience and connections in Europe, Australia and the U.S. to continue to develop our network and further our ability to effect positive change.

Since that time, I have absorbed an incredible amount of information about UBC. In April, I was proud to see UBC rank first among 54 North American universities in the University Global Health Impact Report Card. In this first-time report, UBC (which received an overall A- grade) was the only university to achieve an overall grade higher than a B+, faring well for its commitment to licensing medical discoveries in ways that promote access and affordability in developing countries.

From my predecessors as dean and my colleagues at UBC, I have learned that our alumni are the backbone of our ability to rank well and effect change. UBC Engineering alumni contributions are massive. From creating solutions to problems throughout the world, to building much of the Province of British Columbia, to helping educate students by providing capstone design projects, mentorship and co-op jobs — everywhere we look, your time, talents and treasures shine. You are not only our past students; you are our present colleagues and advisors. Our future success depends upon you.

Thank you for all you have done and for your continued support.

I promise that together with our dedicated faculty and staff, we will continue to best educate and fully prepare our future engineers — sharing the latest in research findings and innovative practices — to make valuable contributions to industry, the field of engineering and society at large. I look forward to meeting you and building upon the strong foundation you have provided for UBC's Faculty of Applied Science. Together, we can create the best future possible.

Sincerely,



Marc Parlange  
 Dean, Faculty of Applied Science



PHOTO CREDIT: MARTIN REE

*"We will continue to best educate and fully prepare our future engineers ...to make valuable contributions to industry, the field of engineering and society at large."*

Marc Parlange  
 Dean, Faculty of Applied Science

ON THE COVER

The School of Engineering takes its rightful home in the Engineering, Management and Education Building at UBC's Okanagan campus. The building officially opened in January 2013. Since 2005, the school has progressed rapidly from its humble beginnings in portable trailers.



Photo credit: Stephanie Tracey

To view past issues of Ingenuity, visit: [www.engineering.ubc.ca/publications](http://www.engineering.ubc.ca/publications).



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 Development and Alumni Relations  
 Engineering Co-op Office  
 Engineering Student Services

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# BUILDING ON TRADITION... THE SCHOOL OF ENGINEERING COMES OF AGE

Remember 2005? The year began with the world focused on December's devastating tsunami in Asia. George W. Bush began his second term as U.S. president. Moviegoers saw *Harry Potter and the Goblet of Fire* and *Star Wars: Episode III — Revenge of the Sith*. And who could forget the NHL season — the one that wasn't played.

In *Ingenuity*, we announced the beginning of engineering at the new Okanagan campus.

UBC's School of Engineering builds upon the quality education offered for nearly 100 years on the Vancouver campus — but the students, faculty and staff have taken the tried and true, the established, and given it a fresh spin to serve the needs of society in the 21st century.



Awarded more than  
**\$15M**  
for 137 research grants 2005-13

Total research dollars  
**\$5,052,000** 2011-12  
**\$117,000** 2005

Faculty  
**41** 2013  
**7** 2005

## Making a home: From trailers to the Gold Standard

In 2005 we introduced the School of Engineering's seven faculty members: Sander Calisal, P.Eng.; Richard Klukas, P.Eng.; Carolyn Labun; Craig Merkl, P.Eng.; Gordon Lovegrove, P.Eng.; Andrew Labun, P.Eng.; and Nicholas Swart, P.Eng. When we interviewed founding (and continuing) Director Spiro Yannacopoulos, P.Eng., on the muddy footprint of the school's future home, he said he took the job because "being part of a newly established engineering school at a world-renowned university is an opportunity that doesn't come often."

For the first few years, pre-tenured faculty held office hours and conducted research in portable trailers (with occasionally intermittent power ruining wet-lab experiments); faculty and staff trekked to the gym to use the washroom, as there was no running water in the trailers; and without the option of living on campus, students bused in for long days.

With the official opening of the Engineering, Management and Education (EME) Building on January 31, 2013, the school celebrated its rightful home. At 186,000 square feet, the four-storey, \$68-million Gold Seal Standard facility is one of the largest projects undertaken as part of the UBC Okanagan campus master plan. Multipurpose classrooms, project rooms and laboratories bring students together through cross-disciplinary learning opportunities. The building also features a spacious glass atrium and social spaces to foster collaboration among engineering, management and education students. A green roof and low-flow fixtures provide 40 per cent savings over conventional systems, and the EME uses a groundwater geothermal exchange system, making it one of the most sustainable buildings in the Okanagan.

## Unique learning

The School of Engineering has provided a unique learning environment since day one. In September 2005, 67 students entered the innovative Engineering One first-year program. With the goal of providing design experience from the start of their formal education, students in all three disciplines — civil, electrical and mechanical — study a common first-year and second-year program to build a foundation for further skill development. The curriculum emphasizes project-based learning, offering first-year students the opportunity to apply engineering design principles in class competitions. "With small class sizes, all first-year students gain hands-on experience," says Yannacopoulos, who also holds the title of Associate Dean, Faculty of Applied Science. "It's virtually unheard of at top-tier universities but invaluable for student learning and for them to engage with their curriculum."

The School of Engineering's common first- and second-year curriculum includes team design projects in both years. The EME Building — purposely built to facilitate team projects — includes spaces that students can use for meetings, presentations, group work and study sessions.

PHOTO CREDIT: DAREN HANSEN/UBC

Student Enrolment Growth

**884** 2013

**67** 2005

Engineering Co-op Work Terms

**165** 2012-13

**60** 2007-08



Clockwise from top left: Students build trebuchets in style for the EUS competition in April 2013.

The School of Engineering's winning concrete toboggan team during the 2012 competition in Calgary. In 2014, UBC's Okanagan campus is hosting the event.

Engineering students such as Devyn Farr (BASC '13, ELEC), are particularly resourceful and often use the glass walls of meeting rooms in EME's Hallisey Atrium for notes and calculations.

Civil engineer Bahareh Reza (PhD '13 CIVL), the first female PhD graduate at the School of Engineering, says, "Living in Kelowna is one of the most important advantages of studying at UBCO. In my opinion, Kelowna is one of the most beautiful places in North America."

Kelowna has truly embraced the School of Engineering in the community — or is it the other way around? The "Welcome to Kelowna" sign lost its "A" when a driver plowed into it. It was mysteriously replaced with an "E."

In 2012, first-year students created fundraising ideas and project proposals for local not-for-profit organizations. It is a mutually beneficial relationship that gives students real-world experience while teaching them that engineering is about being responsible citizens who serve their communities according to School of Engineering Instructor Laura Patterson.

Project learning, which encourages students to integrate engineering principles within a team environment and fosters interdisciplinary thinking, continues in subsequent years.

Growing enrolment validates this project-learning approach. Since 2005, the number of students enrolled in the School of Engineering has increased from 67 to an astounding 884.

And as at the Vancouver campus, Engineering Co-op provides valuable paid, relevant experience for students at the Okanagan campus. In 2007-08, School of Engineering students participated in 60 Co-op work terms. In 2012-13, the number grew to 165 terms — a 175 per cent increase from the program's inaugural year.

### Old Red, New Red

From the early days, School of Engineering students have embraced the traditions established on the Vancouver campus while giving the Reds, the pranks, the competitions and even the E their own spin.

First came the Okanagan Reds — similar to the Vancouver style, but with white sleeves.

Then came the giant red E, mysteriously erected

overnight in 2007. Unlike the indestructible yet oh-so-tempting-to-vandalize E Cairn in Vancouver, the seven-foot Okanagan E stands larger than life — and impossible to miss because it's installed in front of the EME Building. Made of concrete packed with rebar, the giant red E weighs in at 13,500 pounds.

School of Engineering students have taken it upon themselves to give back through pranks and competitions. In 2012 Ogopogo (wearing an E) left a trunkful of donations for the Salvation Army during E Week. A note inside challenged local businesses and members of the community to match Ogopogo's gift and perform helpful deeds.

We have yet to discover the benevolent deeds associated with the KelownE sign or the Ogopogo suspended in an E boat under the Bennett Bridge, and we likely never will. True to tradition, UBC Engineers do not take credit for stunts.

Beyond the jackets and the stunts, the Old Reds have been integral to the New Reds' success.

The support of alumni and their families is particularly evident within the new EME Building. Enter the Hallisey Atrium, so named in loving memory for Richard S. Hallisey (BASC '63 CIVL, GEOE), P.Eng., a successful engineer and businessman.

Look up from the atrium and see Jacobs Bridge connecting the engineering and management education sides of the building. The bridge was named by the Jacobs family — Gil (BASC '53 CIVL), Mary Lou, Shawneen and Mike (BASC '85 CIVL), P.Eng. — in memory of Frank Jacobs (BASC '89 CIVL) and Mary Jacobs (BCom '87), alumni siblings.

"Naming the bridge jumped out right away as the perfect fit for honouring my brother, an Engineering grad, and my sister, a Commerce grad," says Mike Jacobs.

The Jacobs family also established annual bursaries for Civil Engineering students.

Alumnus Randy Findlay (BASC '73 CHML) leads the fundraising campaign for the School of Engineering and has assembled a dedicated team of UBC alumni and community supporters, including David Maddison (BASC '79 CHML); David Stenning (BASC '75 CIVL); Sean McBurney (LLB '01 Law); Rob Pearce (BASC '82 GEOE); Jack Van der Star (BASC '77, MASC '82 ELEC), P.Eng.; Dick Fletcher, P.Eng.; Mike Jacobs (BASC '85 CIVL), P.Eng.; and Malcolm Metcalfe (BASC '67, MASC '70 ELEC), P.Eng.

### Community support

The School of Engineering was originally developed in consultation with the Okanagan Science and Technology Council and UBC's Engineering Advisory Council, and linkages with industry are significant factors in the success of engineering in the Okanagan.

Scholarships and awards provided by CTQ Consultants, BC Hydro and Stantec enable many students to attend university. And industry partners provide invaluable work experience by hiring Engineering Co-op students and challenging them with capstone design projects.

### Research powerhouse

The School of Engineering harnesses the power of creative collaborations — building partnerships to innovate in areas such as fuel-cell technology, disease discovery, wastewater recovery and seismic-resistant, composite and smart materials.

School of Engineering faculty, awarded more than \$15 million to date for research infrastructure, partner with industry to obtain Natural Sciences and Engineering Research Council (NSERC) Engage Grants, which are intended to give Canadian companies unique access to university expertise.

The School of Engineering has been awarded more than 137 research grants since its inception.

### Excellent teachers and motivated staff

Each year the UBC Okanagan campus recognizes outstanding teachers, and School of Engineering faculty always make the grade. Faculty Yang Cao, P.Eng., Kenneth Chau, P.Eng., Mina Hoorfar, P.Eng., Jonathan Holzman, P.Eng., Ahmad Rteil, P.Eng., Carolyn Labun, Homayoun Najjaran, P.Eng., and Ray Taheri, P.Eng., have all been recognized — some multiple times and with multiple awards. In addition, Holzman received the 2013 Award for Teaching Excellence and Innovation.

In 2010, Administrators Teija Wakeman and Maria Graziano were awarded \$8,100 to develop a two-year Aboriginal recruitment and retention program in engineering, and, along with staff members Karen Seddon and Russell LaMountain, have also received the UBC President's Service Award.



### Coming of age

By all accounts, the School of Engineering has come of age.

In 2006 Yannacopoulos stated, "The measure of our success depends upon how our students view their education and how well the business community considers them trained as engineers. Alumni and employer satisfaction will be key indicators of our success."

In 2010 the Canadian Engineering Accreditation Board — consisting of academic, industry, government and provincial engineering associations — granted the school's three programs full accreditation for three years, the maximum period for new programs.

On June 6, 2013, the School of Engineering's accreditation was announced as having been renewed in all three programs — a remarkable feat for an engineering program that only eight years ago was just an idea waiting to happen. ■

The School of Engineering's Spiro Yannacopoulos, Director and Associate Dean, has provided leadership and vision, ensuring both the fully accredited program and state-of-the-art EME Building were built from scratch and built to last, keeping with UBC's highest standards.

The giant red E was mysteriously erected just outside the EME Building.

ALPHA TECHNOLOGIES, CORVUS ENERGY AND UBC CREATE A

# “SMART GRID” ENERGY-STORAGE SYSTEM

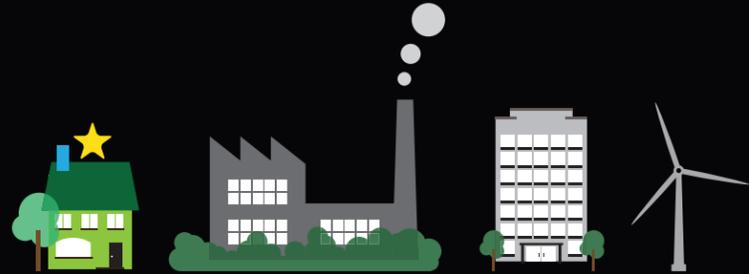


PHOTO CREDIT: MARTIN DEE

From left: UBC Professor and Head of Electrical and Computer Engineering André Ivanov, P.Eng., Mr. Fred Kaiser, Chairman, The Alpha Group; Mr. Brent Perry, CEO, Corvus Energy; UBC's President Stephen Toope and VP Finance Pierre Ouillet at launch.

On April 19, Alpha Technologies, Corvus Energy and UBC celebrated a new energy-storage system that will provide emergency backup power for the UBC campus — the first step in bridging the gap between intermittent energy generation from alternative energy sources and a stable community power grid.

In announcing the partnership, UBC President Stephen Toope said, “This collaboration brings power and energy together with the dynamism UBC embodies through learning, research and contribution to the community, and what especially excites me about it is that it’s a first for all of us.”

The collaboration is part of UBC’s Campus as a Living Laboratory initiative, which allows UBC to explore various aspects of sustainability by using the university’s physical infrastructure to test new technologies and policies.

The project began with a need for backup power for the new Bioenergy Research and Demonstration Facility (BRDF), which uses biomass from UBC and the surrounding community to create heat and electricity. Instead of using a conventional diesel

generator for backup, UBC began working with Alpha Technologies and Corvus Energy to create a system based on Alpha’s power nodes and Corvus’ lithium polymer batteries.

The partnership quickly extended beyond backup for the BRDF, adding two additional nodes, including one at the Networks of Centres of Excellence Building. The second installation provides clean and stable power to laboratories that house mass spectrometers — instruments that are particularly sensitive to power fluctuations. Filtration of the power through the batteries in the building is expected to reduce laboratory downtime and repairs. The third node was installed within the Fred Kaiser Building, which houses the Department of Electrical and Computer Engineering. Faculty members from the department will work closely with Alpha and Corvus engineers to hone the technologies and improve the systems on campus.

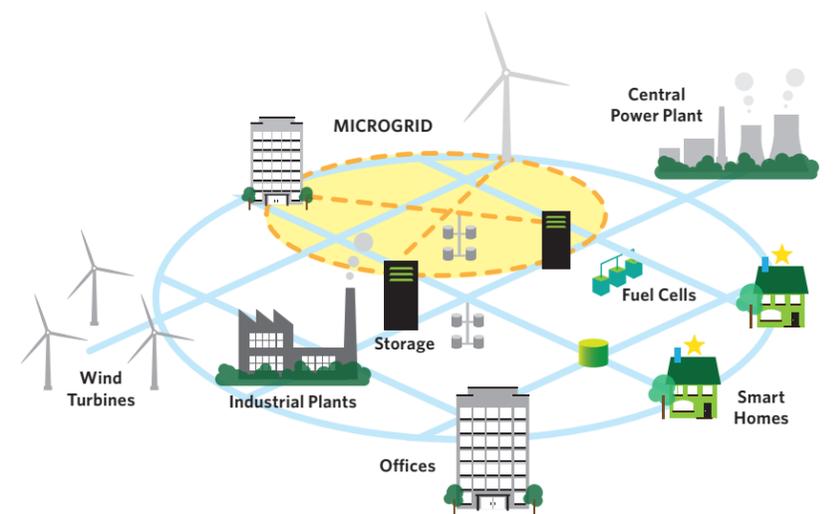
Funding from Natural Resources Canada’s Clean Energy Fund has provided a supervisory management system for all three nodes, allowing them to be coordinated and controlled as a single unit.

The technology has much larger implications for the future of energy distribution. The energy-storage system is the first step in addressing the two main barriers to widespread adoption of green energy-generation technologies: the intermittent generation of green energy, and the expense of integrating this intermittent power into a centralized power system. The solution is the creation of microgrids that can feed energy back into the grid during times of peak energy demand if the microgrids have excess generation or stored energy.

President Toope thanked partners Alpha and Corvus, saying, “Everything we do is aimed at solving local, national and global sustainability challenges at a scalable, commercially viable level. But we cannot meet that goal alone — and, in fact, we are exponentially more successful in partnership.” ■

For more information about the partnership, visit [apsc.ubc.ca/alpha-corvus](http://apsc.ubc.ca/alpha-corvus).

## POWER GRID VISION 2020 - SMART GRID



Power generation is moving from a centralized to a distributed model, requiring distributed monitoring and control systems.

## UBC ENGINEER HELPS PIONEER FLAT SPRAY-ON OPTICAL LENS

Assistant Professor Kenneth Chau recently published research that explains how he and his colleagues developed a negative-index material that can be sprayed onto surfaces to act as a lens.

A team of researchers, including a UBC engineer, have made a breakthrough in utilizing spray-on technology that could revolutionize the way optical lenses are made and used.

Kenneth Chau, P.Eng., an assistant professor in the School of Engineering at UBC's Okanagan campus, worked with principal investigator Henri Lezec and colleagues Ting Xu, Amit Agrawal and Maxim Abashin at the National Institute of Standards and Technology in Maryland on the development of a flat lens. Their work was published in the May 23 issue of the journal *Nature*.

Nearly all lenses — whether in an eye, a camera or a microscope — are curved, which limits the aperture and, therefore, the amount of light that enters through the lens.

"The idea of a flat lens goes way back to the 1960s, when a Russian physicist came up with the theory," Chau says. "The challenge is that there are no naturally occurring materials to make that type of flat lens. Through trial and error, and years of research, we have come up with a fairly simple recipe for a spray-on material that can act as that flat lens."

The research team developed a substance that can be affixed to surfaces like glass slides and turn them into flat lenses for ultraviolet-light imaging of small objects, such as biological specimens. The technology could change the way imaging devices such as cameras and scanners are designed.

"Curved lenses always have a limited aperture," he explains. "With a flat lens, you can make lenses with an arbitrary aperture size — perhaps as big as a football field."

While the spray-on flat lens represents a significant advancement in technology, it is only a first step, although an important one, Chau says.

"This is the closest validation we have of the original flat-lens theory," he says. "The recipe, now that we've got it working, is simple and cost-effective. Our next step is to extrapolate this technique further, explore the effect to the fullest and advance it as far as we can take it." ■

PHOTO CREDIT: PATTY WELBORN

## NEW SOFTWARE AIDS MEDICAL IMAGE INTERPRETATION

Making sense of medical images just got a lot easier — and a lot more accurate — thanks to new software developed by UBC Electrical and Computer Engineering Associate Professor Rafeef Abugharbieh, P.Eng., and her colleagues at Simon Fraser University (SFU).

The software, called TurtleSeg, allows users to segment medical images such as magnetic-resonance or computed-tomography scans faster and more accurately than existing software can.

Medical-scanning technologies capture three-dimensional images of an organ or part of the body by stacking a number of two-dimensional "flat" images. The final image is then similar to a deck of cards. Collectively, these images provide doctors or researchers a snapshot of an organ or other part of the body.

"Most existing segmentation programs tend to fall at extremes," says Abugharbieh. "They are usually either completely manual — requiring users to spend excessive amounts of time working on the images, which introduces a higher likelihood of variability and errors in interpretation — or they're entirely automated, which is neither fully robust nor accurate."

Image segmentation is the process of identifying boundaries, edges, colours and textures of objects being imaged, which allows doctors and researchers to more accurately interpret the images and visualize and quantify organ volume or shape to track disease progression or drug effects, plan surgical interventions or design radiation-therapy plans.

"What sets TurtleSeg apart from other programs is its Spotlight feature and its active learning capabilities," says Ghassan Hamarneh, associate professor at SFU. "The Spotlight feature is similar to the 'parking assist' feature on many new cars, in that automated guidance is available to alert the user but the user ultimately maintains final control."

The TurtleSeg program will not only automatically segment a three-dimensional image, it will also highlight or "spotlight" areas suspected to be poorly identified, alerting the user to help assess those areas interactively with the program. The program then uses the new user feedback to learn from the corrections made and automatically improve the segmentation.

TurtleSeg enables clinicians such as radiologists and surgeons to have better results in much less time — 60 per cent less — spent on image analysis, reducing overall healthcare costs and wait times.

A free version of the patent-pending TurtleSeg software and its Spotlight feature is available to download and includes a one-year license. The program has generated considerable international interest, with more than 1,000 downloads by companies, academic-research labs and hospitals throughout North America, South America, Europe, Asia, Australia and Africa. ■

*Researchers interested in trying the software are encouraged to download it from [www.turtleseg.org](http://www.turtleseg.org) and contact Abugharbieh at [rafeef@ece.ubc.ca](mailto:rafeef@ece.ubc.ca) with any questions.*

PHOTO CREDIT: DON ESHAQI

# Newsworthy

## STUDENTS

## Engineering Student Centre update



Drawings of the Engineering Student Centre by Urban Arts.

With this edition of *Ingenuity*, we are pleased to show you more views of the proposed Engineering Student Centre (ESC) on UBC's Vancouver campus. The new centre will provide space for student group work, learning, socializing, relaxing and extracurricular activities. Open to students across every engineering discipline, the facility will help integrate engineering studies and facilitate networks among students that will enhance their lives and careers. The combination of open, flexible space on the ground floor with dedicated study and meeting rooms above will provide students with the variety of spaces they have been seeking on campus.

We thank all the alumni who have made contributions to honour former Dean and UBC President Walter Gage and UBC's first female graduate, Rona Hatt Wallis (BASc '22 CHML), with the naming of the Walter Gage Commons and Rona's Room. During summer 2013, Dean pro tem Eric Hall pledged to match all support given

to these two initiatives, up to \$500,000. If you'd like to make a donation to the Walter Gage Commons or Rona's Room and want to take advantage of the opportunity to double your contribution through this generous matching offer, please let us know.

We have also had considerable interest from local and national industry partners who want to help make this student resource a reality — stay tuned for announcements of our generous supporters.

We only need \$1 million more to ensure Board II approval — the last 20 per cent of this \$5 million facility. With Board II approval in September, we will be able to break ground for the new ESC in October, with expected completion later in 2014.

We look forward to welcoming all our Engineering alumni back to the Engineering Student Centre! ■

Visit [apsc.ubc.ca/donate](http://apsc.ubc.ca/donate) or call us at 604-822-8335.

## STUDENTS

## EUS President's message



Dear UBC Engineering Alumni,

Thank you all for your support, mentorship and involvement with the UBC Engineering community. We truly value all the time and resources that you spend guiding us through our degrees and facilitating our transition to the workforce.

I am proud to be the Engineering Undergraduate Society President for 2013-14. When I'm not studying Mechanical Engineering, I am passionately involved within our student community: engaging our students and leading the Thunderbots team, fostering an inclusive environment with Women in Engineering and developing global engineering practices with Engineers Without Borders.

This is an exciting year in UBC Engineering. We will be welcoming our new dean, building a new Engineering Student Centre and hosting more professional development events than ever before.

The design and planning for the new Engineering Student Centre is well underway — a wonderful new home for our students to socialize and study.

But we need your help. Students have contributed half of the building cost, and we have had tremendous support from alumni and industry thus far. We hope to wrap up the fundraising in the next two months, so if you are eager to support a great place for engineering students in the years to come, this is your chance to make a difference.

Additional opportunities for your engagement:

- Join UBC while we host the National Conference on Women in Engineering in November 2013 and the Western Engineering Competition in January 2015.
- Help with design reviews for Engineering Student Teams or create and judge a problem for the November UBC Engineering Competition.
- Become a mentor in the Tri-Mentoring Program or help facilitate one of our many professional-development workshops.

Please contact me at [president@ubcengineers.ca](mailto:president@ubcengineers.ca) to get involved.

Warm regards,

Andrea Palmer

EUS President 2013-14 ■

## ALUMNI

## Alumnus Dr. Roy Stuart establishes scholarship

UBC Engineering alumnus Roy Stuart, PhD, P.Geol. (BASc '50 GEOE), recently established the Roy A. Stuart and Family Engineering Scholarship, which will award \$5,000 each year to an undergraduate Geological or Environmental Engineering student entering his or her third year of studies or beyond.

The endowed award exemplifies Dr. Stuart's generosity, as well as his appreciation for his alma mater. Stuart greatly values the experience and the education that he received as an engineering student at UBC. Even now, over 60 years later, he insists that the comprehensive foundational knowledge that he acquired during his undergraduate studies at UBC was instrumental to his subsequent completion of a master's degree from Dartmouth College, a PhD from Princeton University, and a distinguished 35-year career in oil and gas exploration for Chevron Canada.

However, like many other students of his time, Dr. Stuart did face a degree of financial hardship during his undergraduate years. "After the Second World War, times were tough and it was financially difficult to attend university," Dr. Stuart recalls. "Even though I was at the top of my class, there was no money available through scholarships." He still considers himself fortunate to have been able to afford his UBC degree and to have had scholarships to support his attendance at Dartmouth and Princeton.

Stuart is well aware of the fact that many of today's talented and intelligent students are also struggling to afford the benefits of a quality post-secondary education. This realization, coupled with his desire to give back to the institution that so completely prepared him for a fulfilling career, prompted Dr. Stuart to generously establish his scholarship. "If I can help make it easier financially for someone to graduate from UBC," he states, "that would be wonderful." ■

## RESEARCH

## UBC engineers develop program to pre-empt underground water-main failure



Civil Engineering Professors Rehan Sadiq (left) and Solomon Tesfamariam have developed a risk-assessment program that can help predict when underground water pipelines will fail.

*Further research may expand use into the oil and gas pipeline industry*

When it comes to underground infrastructure such as water mains, it's not a matter of whether a system is going to fail but when, says Solomon Tesfamariam, P.Eng., professor of civil engineering at UBC's Okanagan campus.

Tesfamariam stresses that municipal infrastructures are at risk because they have been underground, unchecked, for decades. Many small municipalities in BC don't have the resources to routinely monitor underground systems, he says, so they can only react when a system fails and residents are left without service.

Tesfamariam and fellow UBC Professor Rehan Sadiq, P.Eng., have developed a computer program that will act as a decision-support tool for planning infrastructure repairs or estimating longevity. It is now being tested by the Glenmore-Ellison Improvement District (GEID) and the District of West Kelowna (DWK) as part of a three-year project.

Research funding from the Natural Sciences and Engineering Research Council of Canada will support five UBC graduate students working with municipal staff to map and assess the overall condition of the underground water mains within the two districts.

## LEARNING

## Industry projects needed for capstone design courses

UBC Engineering is seeking project proposals from industry for senior students' capstone design projects. These practical challenges can be general projects in any engineering discipline, including software, energy, biomedical or microsystems.

In exchange for acting as a "client" for our student teams, partners will receive the equivalent of subcontracted design work, with students delivering a model of their design or a working prototype (depending on funding) by the end of the project. Partners gain the opportunity to work with potential new hires who will gain experience with their business through their project work with them.

"We are currently in the process of collecting the data," Tesfamariam says. "And then we will come up with a conceptual tool that will help with regular maintenance to help municipalities answer the question, 'What should we be doing now?' — the idea being to find a way to predict where trouble lies and fix it before the system breaks down.

Using existing data from geographic information systems, water-main drawings and plans from the districts, the inventory of underground pipelines will include age, type of pipe material, past failures and service disruptions, soil properties, pressure and water quality. Tesfamariam says a municipality can then input this data into the UBC-designed decision-support computer program and identify specific at-risk areas.

Tesfamariam notes that a recent report by Canadian engineering, public works, construction and municipalities associations states that more than \$50 billion of the total value of municipal water, waste water, storm water and road systems across the country was identified as being in poor or very poor condition, while a further \$121 billion worth is listed as being in fair condition.

It's a problem that simply can't be ignored, he adds. "This is just the very beginning of our research, and it is certainly valid for water mains," says Sadiq. "As research develops, we are confident this can expand into the oil and gas industry, with the hope of preventing future environmental disasters and tragedies." ■

"An ideal capstone project provides a challenging design problem related to a real industrial application," says Professor Daan Maijer (BSc '94, PhD '99 MMAT) P.Eng., director of UBC's Integrated Engineering program. "They are not limited to pure mechanical design — projects can include electrical systems and process development."

As an example, this year a group of fourth-year students developed a self-propelled machine to spray and brush coatings for bike lanes. This proof-of-concept device eliminates the need for masking and automates the spraying process.

Each team is supervised by faculty experts and supported by their UBC Engineering program. However, the best and most successful projects benefit from additional client contributions. ■

*If you have a project in mind, contact UBC Engineering's Community-Based Experiential Learning Officer Ara Beittoei at [ara.beittoei@ubc.ca](mailto:ara.beittoei@ubc.ca).*

## RESEARCH

## Canada Research Chair to study microdevices and nanotechnology renewed



Professor Takahata and his group member discuss a micromachining process used to create a variety of miniaturized devices based on MEMS technology.

The appointment of Electrical and Computer Engineering Professor Kenichi Takahata, P.Eng., as Canada Research Chair in Advanced Micro/Nanofabrication and MEMS was recently renewed. Takahata studies miniaturization technologies and applications, including medical microdevices for intelligent implants and microsurgical applications to enable minimally invasive diagnosis and therapy. Targeted devices include adaptive stents and stent grafts, wireless sensors for brain aneurysms and devices for microsurgery.

Minimally invasive diagnosis and therapy are an important emerging approach being developed in medicine, and highly miniaturized implantable devices and surgical tools are key.

Microelectromechanical systems (MEMS) have a promising potential for increasing the functionality of the devices and tools while decreasing their invasiveness and a wireless interface is essential to enhancing their practicality. Takahata's research explores how MEMS and micro/nanofabrication technologies contribute toward development of the devices and medical technologies.

"We are focusing on bridging the gap between advanced engineering materials and MEMS to bring innovative designs and functions to this critical field," says Takahata.

Takahata's nontraditional approach in fabrication methods and materials has led to advancements in biomedical engineering and health care, among others. For example, his research has shown that "smart" implants can be made using micromachined engineering alloys, which are both robust and compatible with biological material.

Used in treatments of vascular diseases, smart microimplants allow doctors to monitor blood flow and pressure at the local sites wirelessly and detect problematic symptoms earlier in a non-invasive manner, unlike previous methods. As well, radio-controlled microactuators are enabling miniaturized drug-delivery devices toward more effective, pin-point drug delivery with patient-tailored delivery timings and dosages.

Takahata also drives the marriage of MEMS and Nanotechnology to realize high-performance sensors and actuators enabled with nanomaterials for broad application areas including telecommunication, environmental, automotive and manufacturing. Takahata's current research will ultimately advance the practical applications of MEMS devices, contributing to the health and quality of life for people throughout British Columbia, Canada and the world. ■

## RESEARCH

## Cisco Canada begins new collaboration with UBC



From left: Cisco Canada President Nitin Kawale, UBC Director of Strategic Partnerships Brent Sauder, UBC Applied Science Dean pro tem Eric Hall and UBC VP of Communications and Community Partnerships Pascal Spothelfer.

On May 27 UBC welcomed Cisco Canada President Nitin Kawale to campus to celebrate a new collaborative partnership between Cisco and UBC to further smart-energy technologies and converged network solutions.

Cisco joins a number of global companies participating in UBC's Campus as a Living Lab initiative that links campus operations with faculty members, graduate students and companies to put innovative sustainability solutions into place, test them on a larger scale and hone them for wider community use. Together, Cisco and UBC — as part of the initiative — will accelerate the development, demonstration and commercialization of new technologies and solutions.

Cisco and UBC plan to collaborate over the next five years on projects to manage the integration of energy generation, demand and supply in UBC buildings.

Building systems such as environmental controls, security, lighting, energy, video, fire and life safety will also be integrated in a converged network system.

The collaboration will also expand to involve manufacturers of new building-automation devices using this converged network. These projects are expected to help create smarter, more energy-efficient buildings, reducing greenhouse-gas emissions and carbon costs. Many of these projects will involve UBC Engineering faculty members working on similar initiatives. Applied Science is looking forward to working closely with Cisco Canada on developing, implementing and evaluating these innovative new products and management processes.

"Innovation such as that which we see happening at the University of British Columbia truly matters to all of us," remarked Kawale. "It's key to the future of Canada — and ensures that our nation remains vibrant, forward-thinking and able to keep pace with the social and economic transformations happening around the world." ■

## FACULTY

## Russell retires after achieving his undergraduate dream — 50 years later



Professor Alan Russell (BASc '67, MSc '70, PhD '73), will retire June 30, 2013 from the Department of Civil Engineering on the 50th anniversary of his love affair with UBC Engineering — a journey that he began as an undergraduate student at UBC.

Although Russell aspired to be a UBC faculty member as early as his undergraduate years, it was only after he had garnered a name for himself — working briefly at Dominion Bridge in Montreal before pursuing his PhD at MIT and then helping to create the Centre for Building Studies at Concordia University — that he returned to UBC.

Russell began his teaching career at UBC as the sole faculty member in construction and worked to create the construction and project-management program at the graduate and undergraduate levels. When the program gained its second faculty member, Russell became the first Chair in Computer Integrated Design and Construction.

During his academic career, Russell also connected with key construction-industry leaders who supported his research efforts and facilitated his involvement with a number of large-scale projects, such as the Calgary Olympic Oval, the Vancouver SkyTrain, the Confederation Bridge and numerous projects in the U.S. and Hong Kong. "It was great to be able to interact with these visionaries who basically said that we're doing well, but we can do better," Russell mused. "To be blunt about it, they put their money where their mouths were."

In 1997, Russell was named Head of the Civil Engineering Department, where he would grow the faculty, assist in overseeing the building of the Earthquake Engineering Research Facility and create the department newsletter and Engineering Advisory Board. He would also undertake the administration of the Engineering Management Program from the Dean's office, where it was previously housed — a 30-second negotiation that resulted in the hiring of a third faculty member in construction.

Russell emphasized the enjoyment of learning more about his colleagues. "The cliché — though it's true — is that the Civil Department is a very civil place to work," jokes Russell.

Russell is thoughtful about his retirement, citing the relationships that he made with students and colleagues as the highlight of his career. "You get the odd award along the way, but that's not the highlight. The highlight is the people and the relationships."

As a professor, Russell valued his experiences working with "some terrific young people" and said seeing his students grow and succeed after graduation was one of the most rewarding aspects of teaching and graduate-student supervision.

"There is a continuum to life. Your time in the sunshine has a beginning and it has an end, and you have to ask yourself, did I help maintain that continuum?" Russell laughs. "I would say yes, I contributed to it." ■

## Mentor the Next Generation

Mentor activities — roughly 15 hours over six months — are recognized by APEGBC toward professional development.

Please share your knowledge and experience with the next generation by mentoring tomorrow's engineers.

For more information, contact Jonathan Lowe at [jonathan.lowe@ubc.ca](mailto:jonathan.lowe@ubc.ca) or 604-822-1432.

[www.engineering.ubc.ca/mentoring](http://www.engineering.ubc.ca/mentoring)

 **Engineering** | MENTORING PROGRAM

## FACULTY/STAFF

## Awards & Achievements

Chemical and Biological Engineering Professor **Mark Martinez**, P.Eng., has received — along with co-authors Mohammed Alaquad (PhD '11 CHBE) and the late Chad Bennington — the Best Graduate Student Paper Award for their paper, "The Permeability of Wood-Chip Beds: The Effect of Compressibility," in the *Canadian Journal of Chemical Engineering*.

Chemical and Biological Engineering Professor **James Piret** has received the Top Cited Research award by the journal *Biotechnology and Bioengineering* for his co-authored paper "Inhibition of Glutamine-Dependent Autophagy Increases t-PA Production in CHO Cell Fed-Batch Processes."

Engineers Canada named Chemical and Biological Engineering Professor **Kevin Smith**, P.Eng., as a Fellow.

Chemical and Biological Engineering Adjunct Professor **Shahab Sokhansanj**, P.Eng., has been inducted as a Fellow of Engineers Canada and received the Standards Developer Award from the American Society of Agricultural and Biological Engineers.

Civil Engineering Professor **Perry Adebar**, P.Eng., received a UBC Killam Teaching Prize.

The Engineering Institute of Canada named Civil Engineering Professor Emeritus **Sheldon Cherry**, P.Eng., a Fellow.

Civil Engineering Professor **Jonathan Fannin**, P.Eng., was inducted as a Fellow of the Engineering Institute of Canada.

Civil Engineering Professor **Michael Isaacson**, P.Eng., was inducted as a Fellow of the Engineering Institute of Canada.

Civil Engineering Professor and Department Head **Reza Vaziri** (MASc '85, PhD '89 CIVL), P.Eng., was reappointed Head of the department for a second one-year term, effective July 1, 2013.

IEEE Canada awarded Electrical and Computer Engineering Professor **Vijay Bhargava**, P.Eng., the 2012 W.S. Read Outstanding Service Gold Medal.

Electrical and Computer Engineering Professor Emeritus **Hermann Dommel**, P.Eng., received the IEEE Medal in Power Engineering.

Professor **André Ivanov**, P.Eng., has been reappointed as Head of the Department of Electrical and Computer Engineering for five years, effective July 1, 2013.

Electrical and Computer Engineering Assistant Professor **Mehdi Moradi**, P.Eng., has been appointed a Peter Wall Early Career Scholar during the 2013-14 academic year.

Electrical and Computer Engineering Assistant Professor **Kenichi Takahata**, P.Eng., has had his Canada Research Chair in Advanced Micro/Nanofabrication and MEMS renewed.

Electrical and Computer Engineering Associate Professor **Matt Yedlin** (PhD '78 Geophysics), was awarded a UBC Killam Teaching Prize.

Materials Engineering Professor and Associate Dean, Research and Graduate Studies, **Akram Alfantazi**, P.Eng., was inducted as a Fellow of NACE International and the Engineering Institute of Canada. He also received the Canadian Materials Chemistry Award at the 25th Canadian Materials Science Conference.

The UBC Engineering Co-op Program named Materials Engineering Associate Professor **Göran Fernlund**, P.Eng., the Faculty Member of the Year for the Vancouver campus.

Materials Engineering Professor and Department Head **Warren Poole**, P.Eng., received the Canadian Materials Physics Award at the 25th Canadian Materials Science Conference. He has also been reappointed as Head of the Department of Materials Engineering for five years, effective July 1, 2013.

Mechanical Engineering Professor **Yusuf Altintas**, P.Eng., received the NSERC Synergy Award for Innovation, along with industry partner Pratt & Whitney Canada. He was also inducted as a Fellow of Engineers Canada.

Mechanical Engineering Professor **Elizabeth Croft** (BASc '88 MECH), P.Eng., received the YWCA Vancouver Women of Distinction Award in the Education, Training & Development category.

Mechanical Engineering Professor Emeritus **Philip Hill**, P.Eng., received the Outstanding Emeriti Faculty Award at the UBC Engineering Excellence awards gala.

Mechanical Engineering Professor **Walter Mérida**, P.Eng., has been appointed Director of the Clean Energy Research Centre for a one-year term, effective July 1, 2013.

Mechanical Engineering Professor **Thomas Oxland**, P.Eng., received a Humboldt Research Award from the Alexander von Humboldt Foundation of Germany.

Professor **Bern Klein**'s (BASc '85, PhD '92 MINE), P.Eng., appointment as Head of the Norman B. Keevil Institute of Mining Engineering has been extended for one year, effective July 1, 2013.

School of Engineering Associate Professor **Jonathan Holzman**, P.Eng., received the UBC Award for Teaching Excellence and Innovation in the Junior Faculty category.

School of Engineering Associate Professor **Mina Hoorfar**, P.Eng., made UBC's Okanagan campus teaching Honour Roll.

School of Engineering Associate Professor **Abbas Milani**, P.Eng., has been named Faculty Member of the Year for the Okanagan campus by the UBC Engineering Co-op Program.

School of Engineering Senior Instructor **Ray Taheri**, P.Eng., made UBC's Okanagan campus teaching Honour Roll.

# Our People



ALUMNI

## Leading the way and forging new paths: Pamela Rogalski

Pamela Rogalski (BASC '07 GEOE, BA '06 English), P.Eng., began her time at UBC forging new paths for engineering students. In 1998, she was one of a group of students looking to place the engineering profession into cultural and societal contexts; as a result, Applied Science created the dual Engineering/Arts degree, and Rogalski graduated with degrees in Geological Engineering and English.

After graduation, while working for BC Hydro, she forged a new path for social development, founding the first corporate chapter of Engineers Without Borders (EWB). She spent four months in 2010 in a consultant role in rural Ghana, learning first-hand the social impact of engineering development.

Rogalski's work with BC Hydro, where she managed contracts and relationships between engineering technical teams, consultants and contractors, combined with her experiences with EWB, demonstrated the social impact that engineering can have. In December 2011, her passion and innovation led her to co-found the Engineering Leadership Council (ELC).

The ELC, an organization working in collaboration with UBC Engineering research groups, EWB and others, is a network of engineering professionals and

partner companies whose focus is on changes to engineering processes and designs that will result in increased social and environmental stewardship and vibrant communities. The ELC's work will help engineering companies understand what their clients are looking for, with new criteria or new measurements of social impact — and how to change their designs to address these interests. The ELC is also providing opportunities for peer-to-peer sharing of best practices and training sponsored by APEGBC (Association of Professional Engineers and Geoscientists of BC).

In the future, Rogalski hopes that the ELC will be a nexus of best practices — a hub with international reach that makes a positive social impact in building communities around the world. Only 18 months in, the ELC is expanding to groups in Alberta and Quebec, with more hubs expected. "We will be able to share best practices — what others are changing in measurement or design — across regions and engineering sectors," she explains. "There's a huge hunger in engineering for knowledge of what is new and what is working. If we can bring these best practices together, and share what has worked in one area with another, it will greatly improve engineering practice — and then benefit our communities."

Rogalski's relevant engineering message especially applies to those who believe engineering is primarily technical work. "This type of innovation is what engineering and engineers are built for," she says. "Engineering affects so much in our communities, and changes — even small changes — have a huge impact on the health and sustainability of our communities. We have the opportunity to make a real and tangible difference through attention to the first stages of design and procurement. Through engineering, we can solve problems and make positive changes." ■

*For more information about the Engineering Leadership Council, please visit [www.english.org](http://www.english.org). The ELC is holding a seminar in collaboration with APEGBC on September 18th. For more information, please visit [http://www.apeg.bc.ca/prodev/events/Meeting\\_the\\_Clients\\_Needs\\_%20sept2013.html](http://www.apeg.bc.ca/prodev/events/Meeting_the_Clients_Needs_%20sept2013.html).*

# UBC ENGINEERING EXCELLENCE 2013



Tagg Jefferson and Connor Schellenberg-Beaver



Claudio Arato



Philip Hill and Eric Hall



Eric Hall and Pamela Rogalski



Eric Hall and James McEwen



James McEwen and Susan Hunter-Jivung

ALL PHOTOS: VARUN SARAN

The Engineering Excellence Celebration brings together alumni, faculty and friends to celebrate the achievements of the UBC Engineering family. This year's event, hosted by emcee Ross Gilmour, P.Eng. (BASC '83 MECH), was held on April 10 at the Four Seasons Hotel in Vancouver.

### 2013 ALUMNI AWARD WINNERS

#### OUTSTANDING FUTURE ALUMNUS AWARDS

##### Tagg Jefferson

Tagg Jefferson (BASC '13 IGEN) has been an exceptional student ambassador for UBC Engineering, as well as a key figure in the student community. As an IGEN student, he self-financed his design team project, which won both the 2012 Industry and Best Year Design awards, and spent a summer working with Simpa Networks, helping to provide affordable solar-power systems to rural Indian villages. Jefferson is also a co-founder of Dragonfly Instruments, a Vancouver-based venture that designs water-testing equipment, and he was named one of Vancouver's Top 24 Under 24 in the 2012 Innovator category.

##### Connor Schellenberg-Beaver

Studying in the prestigious Mechatronics option, Connor Schellenberg-Beaver (BASC '13 MECH) is one of UBC Engineering's brightest academic stars, having also been named a Wesbrook Scholar, a distinction reserved for only 20 UBC students each year. He served as Team Captain of the UBC Supermileage Team in 2011 and 2012 and established and led an informal mentoring system within Club MECH for senior undergraduate students to provide academic guidance to junior students.

#### COMMUNITY LEADERSHIP AWARD

##### Claudio Arato

Claudio Arato, P.Eng. (BSc '89 CHEM, BASc '91 CHML), is a successful and highly regarded professional engineer, inventor and startup junkie. Arato serves as both Principal for Bacchus Consulting and Director of Engineering and Technology for Sonoro Energy. Beyond his career, Arato's contributions within his community are extraordinary, with active involvement in APEGBC; serving as Co-founder and Director of the Cascadia Prosperity Forum; and membership on the UBC Chemical and Biological Engineering Industry Advisory Committee, as well as serving as an invited lecturer in UBC Applied Science.

#### OUTSTANDING EMERITUS FACULTY AWARD

##### Philip Hill

Philip Hill, P.Eng., is Professor Emeritus in UBC's Department of Mechanical Engineering, where he has been a faculty member since 1975. He is recognized internationally as an outstanding scholar and researcher, and is a recipient of the Science Council of BC's Industrial

Innovation Award, the Canadian Institute of Energy Award and the Manning Principal Award for Innovation, among others. In 1995, Hill co-founded Westport Innovations Inc., which specializes in alternative fuel for transportation and industrial machinery, and, as an educator, he has had a significant and lasting impact on UBC's engineering students, remaining engaged with the MECH department since his formal retirement in 1997.

#### YOUNG ALUMNUS AWARD

##### Pamela Rogalski

Pamela Rogalski, P.Eng. (BA '06, BASc '07 GEOE) chose to study geological engineering for its opportunities to promote social and environmental responsibility. Rogalski's commitment to positive social change is also reflected by her co-founding the Engineering Leadership Council (ELC) in 2011. As ELC President, she aims to create a learning community of Canadian engineers that co-develops holistic sustainability principles and best practices in engineering, including infrastructure development. (For more about Rogalski, see story p. 18.)

#### LIFETIME ACHIEVEMENT AWARD

##### James McEwen

Jim McEwen, P.Eng. (BASC '71 ELEC, PhD '75 ELEC, DSc '11), has combined engineering research and interdisciplinary collaboration to identify and solve numerous clinically relevant problems in an innovative career spanning four decades. McEwen founded the Department of Biomedical Engineering at VGH in 1975 and served as director until 1990. He is both a successful entrepreneur and a community leader, dedicating his time and expertise to educating the next generation of biomedical engineers as an adjunct professor at both UBC and SFU, an active mentor and as industry advisor for the UBC Faculty of Applied Science. McEwen has received Honorary Doctorates from SFU and UBC, the Queen Elizabeth II Diamond Jubilee Medal, and was appointed an Officer of the Order of Canada.

#### MCEWEN FAMILY TEACHER RECOGNITION AWARD

##### Susan Hunter-Jivung

The McEwen Family Teacher Recognition Award was established to highlight the contributions high school teachers make to our students and communities through their mentorship. This year's winner, Susan Hunter-Jivung, was nominated by first-year UBC Engineering student Wyatt Gronnemoose. Hunter-Jivung organizes and leads numerous extracurricular events, including Science Challenge Teams and the Environment Club.

#### 2014 ALUMNI AWARDS: CALL FOR SUBMISSIONS!

Tell us which of our alumni, students or emeriti faculty deserve to be recognized. Visit [www.apsc.ubc.ca/awards/alumni\\_awards](http://www.apsc.ubc.ca/awards/alumni_awards) for nomination information.

# Alumni Updates

## Event Highlights

### MATERIALS ENGINEERING INDUSTRY NIGHT JANUARY 24, 2013

Now in its fifth year, the Materials Engineering Industry Night is growing bigger each year. Department industry nights serve a dual purpose of allowing industry and alumni to come and impart their wisdom to the current students, who benefit in return by obtaining advice on everything from studies to career paths. Representatives at this year's Materials Industry Night included Barrick Gold, Nexterra Systems, Engenuity Consulting, Automotive Fuel Cell Corporation, dPoint Technologies, Honeywell Process Solutions, Powertech Labs, New Gold, KGHM Ajax Mining, Acuren, Levelton Consultants, Met-Solve Laboratories and more.

### GEOLOGICAL ENGINEERING ALUMNI AND INDUSTRY DINNER JANUARY 26, 2013

The 11th annual Geological Engineering Alumni and Industry Dinner was held at the UBC Golf Club, with over 60 alumni and friends in attendance. As always, the evening served as a wonderful opportunity to catch up with industry colleagues and meet the next generation of UBC Geological Engineers!

### ROUND UP! ALUMNI AND FRIENDS RECEPTION JANUARY 29, 2013

This year marked the 30th anniversary of the annual Round Up! Conference. The 2013 conference was held at the Westin Bayshore Hotel in downtown Vancouver and catered to thousands of participants from around the globe. The UBC Faculties of Science and Applied Science teamed up at the conference to host an alumni social for UBC alumni conference attendees. Thanks to the hundreds of alumni, students and industry partners who attended the alumni reception. Keep your schedule free next January for more networking.



### OLD RED NEW RED FEBRUARY 7, 2013

Over 80 alumni were in attendance at this year's Old Red New Red, a staple in the Engineering events calendar for many years now. This year, it was truly a family affair, as a number of engineering families with multiple generations came

to participate. The keynote speaker was Civil Engineering 1962 grad Jim Shepard, P.Eng. Shepard's talk focused on "the road less traveled" from UBC Engineering. Born and raised in Vancouver, Shepard talked about how he had to overcome hardship in his youth but that he persevered to become a successful engineer and businessman, which led him to serving as the CEO of both Finning and Canfor. He credited a significant part of his success to Dean Walter Gage in a touching tribute. For those alumni who helped judge the ball models (on the chilly patio!), the winner was Engineering Physics! SPD/AOE and Mining came in second and third, respectively. A special thanks to all the alumni who participated in the judging of these student projects. We look forward to seeing you next year at Old Red New Red 2014!

### CHEMICAL AND BIOLOGICAL ENGINEERING INDUSTRY NIGHT MARCH 6, 2013

A newcomer to department industry nights, the Chemical and Biological Industry Night proved to be a great start to alumni engagement with CHBE alumni and current students. Remarks were given by Department Head Peter Englezos, P.Eng., and the evening featured alumni speakers, including Claudio Arato, P.Eng. (Sonoro Energy), Calvin Chan, P.Eng. (STEMCELL Technologies), Eric Lee, P.Eng. (EnCore Manufacturing) and Wayne Wong, P.Eng. (Kerr Wood Leidal). We look forward to the CHBE Industry Night growing in years to come.

### 3CC MARCH 7, 2013

3CC, Three Course Connection, is an annual student-led mentoring event held in collaboration with the Faculties of Arts, Applied Science and Commerce. The one-night program brings together students and alumni from all three disciplines to connect, network and mentor over a three-course dinner. Throughout dinner, the alumni rotate tables, sharing advice and insights with a new table of students for each course. This distinct setting offers students and alumni alike the opportunity to grow and strengthen their interest in their own field but also broaden their perspectives in other fields. The event has grown with each year, with more students and alumni engaged and enjoying the experience.

### MINING ALUMNI AND STUDENT NIGHT MARCH 21, 2013

Through the diligent work of UBC Mining students, the first Mining Alumni Industry Night drew a great crowd to campus to discuss student initiatives, competitions and general

"rock solid" banter. Student groups from the Mining Games and Mine Rescue teams presented their accomplishments at various events throughout the year. As a Mining graduate from the class of 1964, Jim O'Rourke, P.Eng., was the perfect fit to give the keynote presentation. O'Rourke presented an in-depth talk outlining the strategies and challenges he has faced as the President and CEO of Copper Mountain Mining. At the end of the evening, it was announced that Copper Mountain Mining has generously agreed to provide a significant sponsorship for the UBC Mining Student teams over the next five years. Congratulations to the students, and big thanks to Jim O'Rourke and the other Mining alumni for joining us!

### ENG PHYS SOCIAL NIGHT APRIL 4, 2013

Year after year, the Fizz social night proves to be an event where you'll have the most fun! Held again this year at the TELUS World of Science in Vancouver, Fizz alumni joined current students for an evening of networking, mingling and science fun in the Eureka Gallery. We look forward to seeing everyone again next year for another fun-filled Eng Phys Industry Night.

### IGEN INDUSTRY NIGHT APRIL 4, 2013

The Integrated Engineering Industry Night is always a great experience for alumni and industry who come to meet and experience current students' design projects. This year's projects included a motorcycle jacket that will keep the rider cool, a wearable coffee barista machine and swimming goggles that won't fog up. The big announcement at this year's IGEN Industry Night however, came from IGEN Program Director Daan Maijer, P.Eng., who spoke about the introduction of the IGEN Challenge. The IGEN Challenge is a prize competition for which students will form teams and, over the eight-month academic year, will work to solve the problem. We will give them course credit for trying and a monetary prize if they can solve it. To read more about the challenge, visit [www.igen.ubc.ca/igen-challenge](http://www.igen.ubc.ca/igen-challenge).

### MECH CAPSTONE DESIGN RECEPTION APRIL 15, 2013

Mechanical Engineering invited industry members and alumni to participate in the UBC Mechanical Engineering Capstone Design Celebration Night held at the Engineering Design Center. The evening featured a keynote by Dan Gelbart, Technology Advisor for Kardium Inc. and UBC adjunct professor, as

well as an open house and reception. During the open house, guests were welcome to view the poster presentations and prototypes completed by graduating students as their final design projects. The students work in small teams under the close supervision of a faculty advisor and, when possible, are mentored by a practicing Professional Engineer from industry. Students were required to build a model of their designs and, in some cases, a working prototype for the client. Visit the [mech.ubc.ca](http://mech.ubc.ca) website for more information about the capstone project.



### CHML '70 REUNION MAY 23 AND 24, 2013

The reunion of the UBC CHML '70 class (the first in 43 years) was a great success according to all who attended. We had classmates coming from Israel, California, Quebec, Ontario, Alberta and BC outside of the Lower Mainland. The main event on the evening of May 23 was held at the Seasons in the Park Restaurant atop Queen Elizabeth Park in Vancouver. The evening began with drinks and canapés, then moved on to a four-course dinner and story time, when many classmates recounted adventures that they had experienced over the past 43 years at work. The next morning, we had a tour of the Chem Eng building. Many of our classmates had not returned to the Chem Eng building since graduation, so seeing the new building and especially the labs was quite an interesting and enjoyable experience: 17 of the 22 classmates attended the tour. Professor Peter Englezos, P.Eng., Head of Chemical and Biological Engineering, presented the new and improved Chemical and Biological Engineering faculty to us and highlighted the evolution of the faculty from our day to now. The most striking difference was the addition of the biological engineering component to the faculty and the number of female undergrad and grad students. Englezos gave us a tour of the building and labs, and we met with Professor Norman Epstein in the hall, which was a great treat for most of us. Considering Epstein was one of our professors when we attended UBC, it was especially wonderful to see that he has not lost any of his sharp wit nor his quick comebacks over the past 43 years. We ended our reunion with a farewell lunch at Mahoney

and Sons pub on campus, where we all agreed to get together before the next 43 years have passed.

*Submitted by Anthony Galloway (BASC '70 CHML)*

### ALUMNI WEEKEND — ENGINEERING REUNION RECEPTION MAY 24 AND 25, 2013

Alumni Weekend, a campus-wide event, is a wonderful chance for alumni to return to campus and visit their old haunts, participate in activities such as Classroom without Quizzes and, for Engineering alumni, attend the annual Engineering Reunion Reception. This year marked the 50th anniversary of the class of 1963, who returned to campus for their all-department reunion and took in, as part of their week of reunion events, the dean's presentation and some of the department tours offered during the afternoon. In addition to the dean's presentation at the Reunion Reception, this year we celebrated milestones of the Engineering classes of 1953, 1963, 1973, 1983, 1988, 1993 and 2003, and we made sure to take class photos. Over 70 alumni, accompanied by family and friends, were in attendance, and we look forward to next year's event already. If you weren't able to make it to campus for your 2013 on-campus reunion, there is still time this year to organize your own reunion! Contact the Applied Science alumni office at [courtney.smith@ubc.ca](mailto:courtney.smith@ubc.ca) or 604-827-3870 to help you get started on your reunion plans.



### '63 - 50TH REUNION MAY 24-26, 2013

The Engineering Class of 1962/63 enjoyed a very successful 50th reunion on the weekend of May 24-26. All disciplines were represented, with a total of 55 classmates participating in one or more of the events, which were planned to coincide with Engineering Alumni Days activities. A Friday night "Ice Breaker" Pub night got the weekend off to a start, followed by a full day on campus Saturday, including an outstanding lecture by Professor Steve Cockcroft and tours of both the Centre for Interactive Research on Sustainability and the Bioenergy Research and Demonstration Facility. A Saturday night reception at the Vancouver Lawn Tennis & Badminton Club

was attended by 85 classmates and partners. Additional activities were organized by both the Civil and Electrical classes. To commemorate their 50th reunion, the Class of 1963 collectively gave a gift towards the Walter Gage Commons in the Engineering Student Centre. Thanks to John Montgomery and Jim Holloway, among others, for organizing the largest reunion that we have had on campus in years!



### BIO RESOURCE ENGINEERING ALUMNI REUNION MAY 25, 2013

The Department of Chemical and Biological Engineering and Applied Science Alumni Relations hosted a reunion for all Bio Resource alumni over Alumni Weekend. Bio Resource Engineering, now a part of CHBE, was once its own department, and the department felt it was important to bring alumni from the BIOE program back to campus to introduce them to, what has been since the late '90s, the Chemical and Biological Engineering Department. Classes from BIOE were small, and although some of the alumni have kept in touch with one another, it was a great experience for alumni to come back to campus and mix and mingle with classmates from different years. Fifteen alumni from the program returned to campus and were treated to a tour of the CHBE building and department by Professor and Head Peter Englezos, P.Eng., followed by a group dinner at Mahoney and Sons pub on campus. Highlights from the reunion included a quick stop into the Cheeze by alumni, photos by the Cairn, and reunion organiser Barbara Peat (BASC '80 BIOE), who was unable to join us in person but was able to Skype into the reunion mixer and join the group over the Internet. We look forward to welcoming the Bio Resource alumni back to campus again in the future.



### MINE '73 40TH REUNION MAY 24 AND 25, 2013

On May 24th and 25th, nine of the remaining

15 members of the UBC Mining '73 class got together to tell lies, imbibe some blessed nectars and share 40 years of work and life wisdom. On Friday the group toured the Norman B. Keevil Institute of Mining Engineering and had a briefing from Professor Scott Dunbar, P.Eng., on the current state of affairs in the department. The group was impressed at how enrolment in Mining Engineering has grown over the years. Some commented that they may not have had the GPA to get in these days. Our work done, we repaired to Mahoney and Sons pub. (We did have a nostalgic look at the soon-to-be-demolished Cheeze Factory — or, as we call it, our Mining canoe manufacturing facility). The pub generated insightful discussions of how we would fix the world now that we are so much older and wiser while still retaining our boyish good looks. We all raised a glass that sane heads ensured the right provincial government continued. (It's funny how just one drink can raise a reddened neck rash on all of us).

The next day featured the Dean's afternoon reception and a photo shoot. The highlight evening event was a dinner at the Water Street Cafe for the '73 Miners and wives, with the bonus attendance of two of our former professors, George Poling, P.Eng., and Andy Mular, P.Eng., with their wives. The Mining Machine, always in problem-solving mode, diligently tried to alleviate the restaurant's excess wine storage problem. Each graduate and professor talked about what they had been doing for the past 40 years. Ever-helpful tips were included in the stories. Among other things, we learned the best use of a propane torch in starting a helicopter at minus 50°F, what to do when sued for liability in the U.S., warning signs that your business partners may be dodgy and the impact on your company stock price when you announce your retirement. The evening included some hoary stories about activities during our years at UBC that few of the wives (or profs) had heard. The tellers swore to the veracity of the tales.

*Submitted by Michael Allan, P.Eng. (BASC '73 MINE)*



**ELEC '83 30TH REUNION**  
MAY 25, 2013

The Electrical Engineering class of 1983 celebrated their 30th reunion on Alumni Weekend. Over 20 classmates — mostly from the Lower Mainland and Washington, one all the way from Vietnam and another from Silicon Valley — attended and many proudly wore their Reds to show off their patches and holes! The group had a nice dinner on Saturday evening and got caught up on a lot of funny stories. It was great to see everyone, and we all agreed that we aren't going to wait another 10 years to get together!

*Submitted by Bill Richardson P.Eng., (BASC '83 ELEC)*

**APPLIED SCIENCE GRADUATION**  
MAY 28, 2013

At the end of May, we welcomed over 1,000 new Engineering graduates to the UBC alumni community. George Plant, P.Eng. (BASC '50 MECH), Pamela Rogalski, P.Eng. (BA '06, BASC '07 GEOE), Winnie Lai-Fong, P.Eng. (BASC '88, MASC '91) and Frank Margitan, P.Eng. (BASC '76 CIVL) represented the Engineering Alumni community at the graduation ceremony and helped to welcome the new graduates. We congratulate all of you, our newest alumni, on your recent graduation and hope that you'll keep in touch with us through your career and beyond. Congrats, Class of 2013!



**MECH '68 REUNION**  
MAY 31 AND JUNE 1, 2013

The Mechanical Engineering Class of '68 recently held a reunion commemorating their 45th graduation anniversary. They gathered at the Railway Club in Vancouver to enjoy snacks and cocktails on the evening of May 31, followed by a dinner at the Refinery on the evening of June 1. Sixteen of the 34 living classmates attended over the two evenings, with 12 spouses also attending the dinner on Saturday evening. In addition to those residing in the greater Vancouver area, attendees travelled

from Montreal, Toronto, Saskatoon, Victoria and the Sunshine Coast to participate in the gathering. As on previous gatherings, everyone had a wonderful time, including the sharing of memories of the highlights of their time together at UBC. The MECH '68 class hopes to continue their 25-year tradition of reuniting every five years by gathering together again for their 50th anniversary reunion in 2018. Big thanks to Brian Callow, P.Eng. (BASC '68 MECH), for organizing.

*Submitted by Ken Johns, P.Eng., (BASC '68 MECH)*



**MECH '88 "GREAT MECHSPECTATIONS" 25TH REUNION**

JUNE 1, 2013

On June 1, 35 members of the MECH Class of 1988 got together with faculty from the department to relive the "good life." The festivities kicked off for 12 of the classmates with an afternoon tour of the Mechanical Engineering facilities led by MECH '88 grad and Professor Elizabeth (Robertson) Croft, P.Eng. Inspired by a looping slideshow of young MECH '88 faces, cheat sheets and adventures, the evening event was a loud din of conversation, laughter and people reconnecting. Class President Dan Blondal, P.Eng., emceed the event, and Department Head Sheldon Green, P.Eng., spoke of then and now in Mechanical Engineering. Many thanks to the organizing committee that included Blondal, Croft, Bruce Douglas, P.Eng., Mary (DesBrisay) Fry, Rob Hadden, P.Eng., Johanne (McKechnie) Mattie, Jennifer (Liley) Merry and Andrea Zaradic, P.Eng.

# Upcoming Events

Here's a snapshot of some upcoming events, but there will be more. Visit our web calendar or subscribe to our monthly e-newsletter at [www.apsc.ubc.ca/news-events/newsletters](http://www.apsc.ubc.ca/news-events/newsletters).

**UPCOMING EVENTS**

**BIOMEDICAL ENGINEERING GRAND ROUNDS SEMINAR SERIES**

MONTHLY, SEPTEMBER-MARCH

Distinguished speakers from industry and academia from across Canada present and discuss current topics in biomedical engineering research, development and practice. [www.bme.ubc.ca/news-events](http://www.bme.ubc.ca/news-events)

**UBC DIALOGUE SERIES**

VARIOUS DATES, BEGINNING SEPTEMBER 2013

Learn, discover, contribute. . . UBC Alumni Affairs is coming to your community to engage in a dialogue and knowledge exchange about the issues that matter most to you. Join us in your community and hear how UBC's interdisciplinary research and teaching are addressing some of these complex societal issues. Visit [www.alumni.ubc.ca/events/dialogues](http://www.alumni.ubc.ca/events/dialogues) for a listing of all upcoming dialogue topics, locations and panel experts.

**UBC ENGINEERING CO-OP 2014 SPONSORSHIP DRIVE**

SEPTEMBER 10, 2013 TO JANUARY 15, 2014

The UBC Engineering Co-op 2014 Sponsorship Drive begins September 10 at 10 a.m. Visit [www.coop.apsc.ubc.ca/employers/sponsorship](http://www.coop.apsc.ubc.ca/employers/sponsorship) for information.

**ANNUAL BIOMEDICAL ENGINEERING SYMPOSIUM**

NOVEMBER 7, 2013 8:30-4:30

Organized jointly by Biomedical Engineering and the Institute for Computing Information and Cognitive Systems, this event is a full day workshop with invited speakers, seminars and student poster sessions.

**UBC ENGINEERING FALL PREVIEW DAY**

LATE NOVEMBER/EARLY DECEMBER

High school students, transfer students, friends and families are invited to explore UBC Engineering. Find out how engineers are improving our world, from the everyday to the extraordinary. Meet our professors, students and staff as they introduce you to the wonderful and diverse world of engineering. [www.engineering.ubc.ca/connects](http://www.engineering.ubc.ca/connects)

**UPCOMING ALUMNI EVENTS**

**CIVL '83 REUNION**

SEPTEMBER 6, 2013

It's been five years since the last CIVL '83 reunion, and this time they're going bigger! Jack Gin (BASC '83 CIVL) and the planning committee are currently working out the details. If you're a classmate and want to get in touch with the reunion committee for more information, contact [sarah.barclay@ubc.ca](mailto:sarah.barclay@ubc.ca).

**CHML '68 REUNION**

SEPTEMBER 13 - 14, 2013

The 1968 Chemical Engineering class will be holding their 45th Reunion on Friday, September 13 and Saturday, September 14. We expect good participation from the group and are planning a pub night at Bridges on Granville Island on the Friday evening and a dinner cruise on the Saturday. We will be based at the Granville Island Hotel. We plan to play golf at the UBC course and likely visit the new Chemical & Biological Engineering building. For more information or to RSVP please contact [courtney.smith@ubc.ca](mailto:courtney.smith@ubc.ca).

**HOMECOMING**

SEPTEMBER 14, 2013

Join us on campus for the annual Homecoming tailgate party and football game! Ticket details will be available later this summer — keep an eye out on the Thunderbirds homepage at [www.gothunderbirds.ca](http://www.gothunderbirds.ca).

**CEEN ALUMNI AND INDUSTRY NIGHT**

SEPTEMBER 17, 2013

Following the success of last year's inaugural event, we're happy to announce the second annual Clean Energy Engineering (CEEN) Student and Alumni Night. This year's event will once again take place on September 17, 2013, at UBC Robson Square. Current students, industry partners, alumni of the program and faculty are invited to meet, mix and mingle after the evening's industry speaker presentations.

**UBC AGM**

SEPTEMBER 26, 2013

The Annual General Meeting for alumni UBC will be held on September 26, 2013 at the Marriott Pinnacle Downtown. All alumni are invited to attend the AGM. For more information, please contact: [sarah.barclay@ubc.ca](mailto:sarah.barclay@ubc.ca).

**MECH '83 REUNION**

SEPTEMBER/OCTOBER 2013

The MECH '83 class is currently planning their fall reunion! Times, dates and locations are still being finalized, but if you're interested in more information on the event, contact [courtney.smith@ubc.ca](mailto:courtney.smith@ubc.ca).

**APEGBC CONFERENCE**

OCTOBER 24-26, 2013

Please mark your calendars and join us for APEGBC's Annual Conference in Whistler, BC, from October 24-26, 2013, at the Whistler Conference Centre. UBC Engineering will be there — please stop by our booth to say hi and maybe win a prize!

**ALUMNI ACHIEVEMENT AWARDS**

NOVEMBER 14, 2013

UBC is proud to recognize its alumni at the 19th annual Alumni Achievement Awards. Awards will be handed out in seven categories including the Blythe Eagles Volunteer Leadership Award, Outstanding Faculty Community Service Award, Global Citizenship Award and Alumni Award of Distinction. To read more about the Alumni Achievement Awards, past winners and how to nominate that special alumnus, visit [www.alumni.ubc.ca/events/awards](http://www.alumni.ubc.ca/events/awards).

**OLD RED NEW RED 2014**

FEBRUARY 6, 2014

Save the date for one of the best alumni events of the year! Reminisce about your time in UBC Engineering and help judge student ball models during E-Week. Make sure to round up your classmates, and don't forget to wear your Reds!



# Looking for a way to take your career forward and effect positive change?

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