

# INGENUITY

FACULTY OF APPLIED SCIENCE  
ENGINEERING NEWS  
FALL 2014 / WINTER 2015

**PROTECTING THE ENVIRONMENT —  
USING NATURAL ENGINEERING**

**SURVIVE AND THRIVE APPLIED RESEARCH FACILITY —  
STAR — TAKES OFF WITH ENGINEERING FACULTY FUELING IT UP**

**SUPERMILEAGE GETS BACK ON THE ROAD**



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA



PHOTO CREDIT: MARTIN DEE

# Dean's Message

Dear UBC Engineering alumni and friends,

Since I began my term as dean, I have been working with the faculty and administration toward several goals related to enhancing the student experience and industry partnerships.

One of our goals is to help foster an inclusive environment that reflects the face of society that engineers serve. Diversity within our student body is essential for nurturing an inclusive environment. We are working toward having equal numbers of women and men enrolled in our programs. This fall our entering first-year class comprised 29 per cent women, well above the national average of 20 per cent (p. 15). To this end, I am committed to recruiting the best and the brightest students — those not only with high averages, but those with outstanding personal profiles as well.

I am extremely proud of our Engineering Undergraduate Society members, who have recently created a new tradition, the Iron Pin Ceremony (p. 15), in which incoming students pledge to adhere to a code of ethics; the pin symbolizes each student's entrance into the profession and welcomes them as a UBC Engineer.

In preparation for their careers as engineers, one of our goals is to provide all students with professional-development experiences. Within this context, 40 per cent of these experiences will be international. I am pleased to report new collaborations with the Technical University of Denmark, Delft University of Technology and École Polytechnique Fédérale de Lausanne that will help achieve this goal (p. 15).

With regard to industry partnerships, I invited you in our last edition of *Ingenuity* to attend Innovate 2014 (p. 14) to engage in conversation for future collaborations. The evening was a great success, and we continue to encourage industry partners to connect with us for research, hiring Engineering Co-op students and graduate students, and to pursue other opportunities in conjunction with Applied Science. We will soon be launching distinctive graduate programs, based on industry feedback, that will prepare experienced engineers to become industry specialists.

And finally, I sincerely thank the Dean's Advisory Council, who met with our associate deans and me in October and continue to provide sage advice as we move forward. I look forward to profiling them for you in the next issue of *Ingenuity*.

Sincerely yours,

Marc Parlange  
Dean, Faculty of Applied Science

*"I am committed to recruiting the best and the brightest students — those not only with high averages, but those with outstanding personal profiles as well."*

Marc Parlange  
Dean, Faculty of Applied Science

## ON THE COVER

Chemical and Biological Engineering Professor Sue Baldwin, P.Eng., studies how microbes can be used to clean contaminated water, such as that in this algae pond.

Photo compliments of Sue Baldwin



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With \$3.8 million in funding, the new Survive and Thrive Applied Research (STAR) facility at UBC's Okanagan campus enables researchers and industry to collaborate on launching innovative technologies and products. Discover the School of Engineering's prominent role in establishing this cutting-edge facility.

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Mechanical Engineering Professor, Hongshen Ma (BASC '01 ELEC, ENPH), P.Eng., has developed a new polymer micro-chip technology that could enable real-time testing of the quality of stored blood to maximize the health benefit of blood transfusions and extend the storage life of blood.

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UBC Supermileage, one of UBC Engineering's record-setting student teams, is officially back in the race. After their two competition cars were totalled, they've now regrouped and are ready to compete.

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# PROTECTING THE ENVIRONMENT — USING NATURAL ENGINEERING

The town of Likely — thrust into the limelight upon news of a broken tailings dam at its Mount Polley mine site in August 2014 — is now known for what some are calling the greatest environmental mining disaster in the history of British Columbia.

The event caused a large amount of tailings to spill into nearby waterways and triggered multiple investigations and calls from environmental and First Nations groups to increase safety and environmental protection measures at industrial mine sites.

Graduate student Jon Taylor and Professor Sue Baldwin conduct water analysis.

Mine remediation — the practice of cleaning up and mitigating environmental impact from mining — is now a hot topic in the public discourse, something that keeps Chemical and Biological Engineering Professor Susan Baldwin, P.Eng., busy.

For the past two decades — and while working at several industrial mine sites in B.C., including Mount Polley — Baldwin's focus has been on microbiological water-treatment methods in the mining industry and efforts to increase the effectiveness of those methods to keep resource water clean.

Microbes — the single-cell organisms that live in every part of the earth, soil, ocean and atmosphere and contribute to a healthy ecosystem — are now recognized as fundamental to the cycling of toxic materials and can influence how they interact with their environment. By using newer advancements in DNA sequencing of whole microbial communities — “metagenomics” — researchers like Baldwin are learning about the ways microbes interact with each other in mine-affected environments.

More importantly, Baldwin is studying how naturally present microbiological processes can be used to break down pollutants and remediate the water and soil that has been contaminated with metals, acid, sulphate and other toxic substances in a mine site.

“We are looking at microbial processes,” she says, “because they are more effective than the older, tried-and-true chemical method and help reduce the residue that mine sites have at the end of the day.”

Successful mine remediation using microbial communities is a result of manipulating a complex combination of processes such as anaerobic respiration and fermentation with microbes and ecological factors to achieve a desired outcome. Baldwin likens it to the ways in which the right balance of healthy bacteria in the human digestive system can have a profound effect on our own health. But in a complex setting like a mine site, with countless microbes and constantly fluctuating environmental influences, it's difficult to re-create a perfect balance of micro-organisms to successfully clean water. And prior to genomics, it was much more

difficult to accurately assess the success of water-treatment processes because the available tools were very limited, says Baldwin.

“In the biological treatment systems that I'm studying,” she says, “there are many different types of organisms, and they play a role in how effective the treatment is. So finding out what they are and what they're doing is a huge challenge.”

While researchers like Baldwin and her team know that microbial processes can successfully treat toxic water and have seen much success in the lab, the bigger challenge is to scale the water-treatment systems up to work effectively on a large mine site and across the mining sector in Canada.

“Put those little systems to work in the lab and they work perfectly,” she says. “But it's a controlled environment. When you go into the field to implement them, they don't work properly. So that's the big gap that I'm specifically interested in.”

The scaling-up process involves collaboration between Baldwin's research team, mining companies, the consulting firms who build the systems and other research partners across B.C. “We collaborate with them and are constantly trying different designs. We use sophisticated tools to figure out what's going on,” she says. “Our industry partners don't have access to the tools that I have, and so together we try to figure this out.”

Which is precisely why further research on microbial genomics is necessary to get water-treatment systems working more effectively and efficiently and be able to guarantee their reliability and longevity in the field, says Baldwin. While she can't comment directly on the failed Mount Polley tailings dam — the cause of which is still unclear, she wholeheartedly attests to the importance of further research on microbial communities and remediation and their direct and increasing relevance to the ever-growing mining industry in Canada.

“Mount Polley was a complete shock,” she says. “This is a world event. It's not just something bad that happened in our backyard... Behind the scenes there are many people working very hard to try to come up with solutions to fix things.” ■

# UBC RECEIVES \$3.8M FOR SURVIVE AND THRIVE APPLIED RESEARCH FACILITY

UBC has launched a new research innovation facility where industry and university researchers can pool their knowledge for the rapid development of novel technologies for human protection, survivability and performance in extreme or remote environments. Applied Science's School of Engineering leads technological advances in this initiative.

This fall The Honourable Michelle Rempel, Minister of State for Western Economic Diversification, announced \$3.8 million in funding to establish the Survive and Thrive Applied Research (STAR) facility at UBC's Okanagan campus in Kelowna, B.C.

STAR combines world-class research expertise and global partner networks to help commercialize innovative products and develop ideas that can be applied in a wide range of sectors, including manufacturing, natural resources, health care and defence.

"Engineering is about finding solutions to today's challenges, and with STAR we are making exciting new cross-disciplinary connections between industry and other research partners to develop innovative ideas into real-world solutions," says Applied Science Dean Marc Parlange. "It is a unique initiative, catalyzing innovation and applying research to meet the needs of industry."

With STAR research equipment support, School of Engineering Associate Professor Homayoun Najjaran, P.Eng., is investigating the use of unmanned aerial vehicles (UAVs) in forestry and agriculture. As part of another research project, Assistant Professors Jahangir Hossain, P.Eng., and Thomas Johnson, P.Eng., study personal wireless stop-button technology for workers using large industrial machines.

## Higher tech: Seeing more from the air

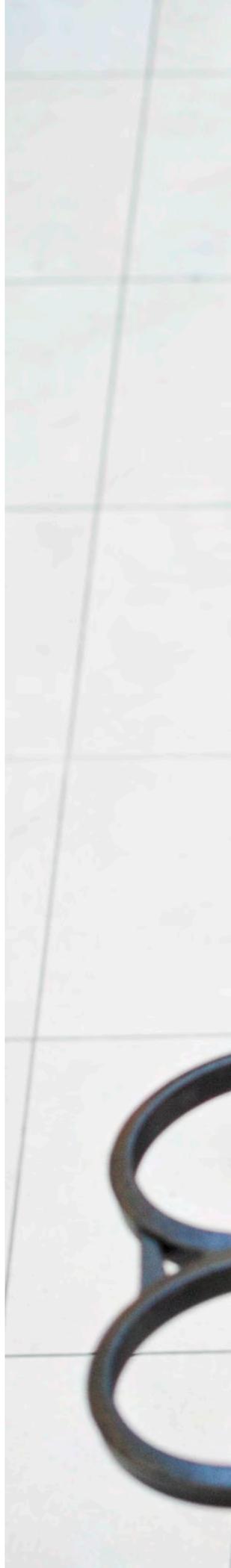
The application of UAVs is taking off at UBC. Intelligent and increasingly autonomous, these flying devices are widely used for visual surveying and remote sensing — carrying an array of sensors, including optical and infrared cameras. It's an emerging high-tech field with tremendous commercialization potential.

That's where STAR comes in.

Najjaran and his team at UBC's Advanced Control and Intelligent Systems (ACIS) Lab are working with partners in forestry and agriculture to develop micro-UAVs, software and sensors for remote sensing techniques that can revolutionize precision viticulture and crop management.

"Using the customized software built in my lab, we provide an intuitive tool for users to utilize in flying their UAVs over their crops," says Najjaran. "Onboard sensors allow the farmers, for example, to better manage their use of fertilizer or modify irrigation systems at far lower cost and fuel emissions than through the traditional way of having a helicopter or airplane fly over their land."

The UAV research will lead to new products and services to improve crop quality and yields in British Columbia's thriving orchards and vineyards. The utility of UAVs equipped with specialized sensors enables



broad applications in search and rescue operations, mining and the oil and gas sector.

For example, UAVs can fly over oil and gas pipelines to monitor for leaks or emissions, they allow search and rescue teams to survey areas not easily accessible on foot to find troubled hikers or skiers, and they can help locate forest fires — providing a safer and more efficient option than piloted aircrafts.

“STAR has significantly enhanced our ability to work with industry and communities. I look forward to the valuable practical experiences my students will have as a result of this new facility,” says Najjaran.

### **Stop the presses: A safer industrial workplace**

Industrial equipment can be big, powerful and dangerous. Often the safety controls are in the form of mechanical buttons that can shut things down immediately.

But what if you can't reach the button when you need to?

That's a safety challenge taken up by Hossain and Johnson in partnership with STAR industrial affiliate Kelowna-based Helios Global Technologies. Together, they are developing a wireless-based emergency stop system for industrial machinery.

The basic concept is to enable an individual to carry a wireless handset that communicates directly with a wireless receiver, which is in turn integrated with a standard emergency stop button.

The system will react in the same manner as a manual emergency stop system and immediately shut down any machine that currently uses an emergency stop system.

“Collaboration with STAR greatly enhances our capacity to develop innovative products,” says Helios CEO Martin Cronin. “It gives us access to world-class research that helps us to test concepts quickly and explore multisectoral applications, and it also gives us access to funding through our research partnerships.” ■

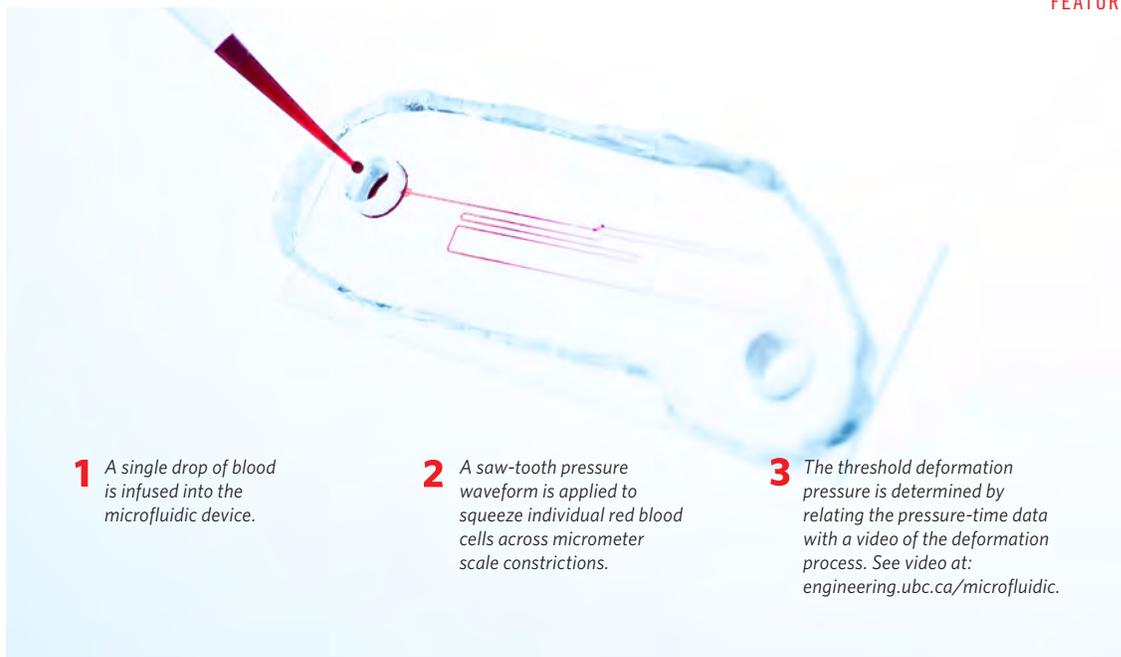
Mechanical Engineering student and Canadian Society for Mechanical Engineering student chapter President Jessica Van Brummelen, and Professor Homayoun Najjaran use STAR to take his UAV research to the next level.



# NEW MICROFLUIDIC TEST COULD SQUEEZE MORE LIFE INTO BLOOD

Blood transfusion is a life-saving procedure that replaces blood lost due to traumatic injuries, surgeries and chronic illnesses. Blood bankers manage the supply of donor blood products and perform the delicate balance of matching supply with demand while ensuring the quality of the precious blood product. One key challenge in this work is evaluating blood quality to ensure optimal use of the blood product and the proper benefit to its recipients.

Professor Hongshen Ma studies the rigidity of red blood cells using a microfluidics device. The relative softness of a cell indicates how long blood can be stored and utilized. His goal is to maximize the health benefit of blood transfusions and extend the storage life of blood.



**1** A single drop of blood is infused into the microfluidic device.

**2** A saw-tooth pressure waveform is applied to squeeze individual red blood cells across micrometer scale constrictions.

**3** The threshold deformation pressure is determined by relating the pressure-time data with a video of the deformation process. See video at: [engineering.ubc.ca/microfluidic](http://engineering.ubc.ca/microfluidic).

UBC Mechanical Engineering Assistant Professor Hongshen Ma (BASc '01 ELEC, ENPH), P.Eng., in partnership with Dr. Mark Scott at Canadian Blood Services, has recently developed a new method for analyzing blood quality that could potentially enable the more efficient use of blood products. Specifically, Ma's group has developed a new microfluidic technology for measuring the mechanical deformability (or "softness") of individual red blood cells that could be used as a biomarker for the health of the cell and the utility of the blood product in transfusions.

Red blood cells are disc-shaped objects measuring approximately eight microns in diameter and two microns in thickness. These cells traverse the entire human circulatory system once per minute and must squeeze through capillaries much smaller than the cells' diameter to distribute oxygen and remove carbon dioxide from body tissues. Over time, naturally occurring biochemical changes make red blood cells more rigid, and eventually, after approximately 120 days, the more rigid cells are removed from circulation by the spleen. Changes in red blood cell deformability are therefore indicative of their age and circulatory capacity.

Until now, there has never been a simple way to test for red blood cell deformability. Existing laboratory methods are slow and cumbersome and therefore difficult to use in clinical settings.

Ma's patented method involves measuring the force required to squeeze single red blood cells through constrictions similar in scale as capillaries in the human circulatory system. These constrictions are fabricated using the process to make silicon microchips and require only a single droplet of blood taken from a blood bag.

"Our technology allows each blood bag to be assessed for initial quality, as well as longitudinally over the entire storage window," says Ma. Currently all blood bags are considered to have a shelf life of 42 days, but many experts believe considerable variability exists between donors — that blood from some donors could be stored longer while blood from other donors expires much more quickly.

"The potential benefit of this technology is to optimize the use of each blood bag to deliver maximum health benefit to recipients while extending storage life," he says. "When a patient receives a transfusion of red blood cells, it's important to ensure that the transfused cells stay in circulation as long as possible and not be rapidly cleared by the spleen." The technology was recently described in the journal *Lab on a Chip*. ■



# SUPERMILEAGE GETS BACK ON THE ROAD

In May 2014, on their way back from the Shell Eco-marathon (SEM), the UBC Supermileage team learned that both of their competition cars had been destroyed when the shipping truck carrying the vehicles was involved in a rollover accident. Fortunately there were no serious injuries and no students were involved, but the loss was devastating.

PHOTO CREDIT: MARISSE EMMANUEL

UBC Supermileage team in April 2014 before heading to competition with Odysseus.

Inset: Supermileage's Odysseus after the wreck; Katelyn Currie (left) and Kevan Cote (right) working on carbon-fibre layups for new chassis and shell.

Just months later, the team is well on their way to rebuilding and is on track to compete in the 2015 SEM in April with two new fuel-efficient cars.

Katelyn Currie, Supermileage team captain and a fourth-year Mechanical Engineering student, remembers the initial uproar that followed the accident and the crucial planning that followed.

"We did a lot of really hard-core revisioning and strategizing," says Currie. Ultimately the team decided to push forward. "We have the people and the skills. Our team is fairly experienced, and we said: 'Let's go for it. Let's try to still be one of the top competitive teams in North America.'"

Supermileage has always been competitive. After first entering the Society of Automotive Engineers (SAE) Supermileage competition in 2001, the team earned first-place finishes in the event from 2003 to 2006, setting a record-

breaking finish of 3,145 miles per gallon in 2006 that was later featured in *TIME* magazine.

For Jonathan Yeung (BASc '06 MECH), P.Eng., who first joined the team in 2003 and served as team captain for a time, their performance was a result of sheer commitment.

"It was really just a pure passion to make this car work, and I think from that perspective it's probably the purest form of engineering I've ever done," he says. Yeung, who now works in the applications engineering department of Spartan Controls, says that what he learned from Supermileage has gone a long way — much like their vehicles.

"On paper, the skills that I picked up don't seem to really match with what I do now, but they actually match in more ways than you would ever imagine," says Yeung. "All that stuff that I learned — leadership, organization, planning, teamwork... and critical



thinking... I learned from Supermileage."

Anxious to take on a new challenge, the relatively small team of eight to 15 members each year shifted gears away from the competition prototype vehicle to an urban concept car designed to bridge the gap between prototypes and actual consumer vehicles, and has competed in the SEM ever since 2010. But just two years ago, the team ballooned in size to over 60 members, which led the team to bring back their prototype vehicle. Since then, the team has managed the impressive feat of designing two competition-ready vehicles every year.

Currie has an idea about why the team grew so rapidly.

"The vision of it — that we want to pursue the most fuel-efficient vehicles — people want to pursue that. You don't have to be in Engineering or Mechanical or anything like that. You can show up and you can participate and you can make something that is really meaningful beyond your UBC education."

Indeed, Supermileage is just one of 22 engineering student teams at UBC in which students are able to exercise their ingenuity across a broad range of disciplines. Ranging from concrete canoes to all-terrain vehicles to biomedical health technology, the teams, represented by the Engineering Design Team Council (EDTC), offer something for everyone.

Although not under the EDTC, the Engineering program at UBC's Okanagan campus (UBCO) also has its share of engineering teams, with the UBCO Concrete Toboggan team and the UBCO Motor Sports Club.

"It's a very vibrant part of the engineering culture at the university," says Mechanical Engineering Associate Professor Machiel Van der Loos, the new faculty advisor for the EDTC teams. "The students have such initiative to be part of these design teams outside of their classrooms and to have such a tremendous commitment to these teams. And that's extremely compelling for me as a faculty member to see how they will take this into their future careers beyond undergrad."

The impact of these teams goes far beyond the undergraduate realm.

"Even if I don't end up going into the transportation industry, the things that I learned as part of a student team are really invaluable. You can't pick them up in a classroom setting," says Currie. "This is where you get to find out whatever it is you're interested in." ■

*If you'd like to help support the team, contact Jonathan Doan, Development Officer, 604-827-4879 or [jonathan.doan@ubc.ca](mailto:jonathan.doan@ubc.ca).*



The faculty advisor position is a new role connecting the Faculty of Applied Science and the various Engineering student teams at UBC. As faculty advisor, Van der Loos will serve as the main point of contact between the Engineering Design Team Council (EDTC) and the Faculty of Applied Science. He is currently working on improvements to the Engineering Design Centre, improving safety procedures and measures, and helping the EDTC outline a clear governance model.

# Newsworthy



## FACULTY

## Engineering Student Centre update



From left: Bowinn Ma (BASC '08 CIVL, MM '09), EUS president 2007-08; Veronica Knott, EUS President 2014-15; Prof. Elizabeth Croft (BASC '88 MECH) P.Eng.; Dean Marc Parlange; Ron Loewen, Applied Science capital projects manager; Andrew Carne (BASC '10 MTRL, MEng '12 CIVL) and Andrea Palmer, EUS president 2013-14 breaking ground for the Engineering Student Centre.

Construction of the Engineering Student Centre, fall 2014.

This past spring, the Faculty of Applied Science broke ground on the site of the Engineering Student Centre (ESC). Construction of the LEED Gold-Certified building is slated for completion in mid-2015, with the facility ready for occupancy in the fall. The ESC's superstructure is nearing completion, with both floors framed, trusses placed and roofing in progress. Following that, work on the building's envelope of glass, glazed brick, metal and exterior insulation finishing will commence. Once complete, the ESC will provide a uniquely interdisciplinary home and multipurpose facility for engineers and alumni from across the faculty — and will house the Engineering Undergraduate Society.

The ESC would not be possible without the contributions of its many donors. Along with the Faculty's dedicated students, Applied Science has raised approximately \$4.9 million toward the \$5 million needed to fund the project. A student-led fee increase, in addition to support from UBC, supplied \$2.5 million, with a further \$2.4 million contributed by 12 industry partners and over 800 individual donors, 95 per cent of whom are alumni.

"The collaboration among students, alumni and our community has been vital to this project's success," says Applied Science Dean Marc Parlange. "I thank everyone who has contributed to the ESC and look forward to celebrating the official opening of the building with you in 2015."

If you missed your chance to support this important legacy project for engineering students and alumni, there's still time — for more information, please contact Debbie Woo in the Applied Science Development Office at 604-822-6856 or [debbie.woo@ubc.ca](mailto:debbie.woo@ubc.ca).

We look forward to showcasing this completed facility in the September 2015 issue of *Ingenuity*. ■

## FACULTY

## UA Local 170 and UBC Engineers: a natural partnership

The United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada has a long history of ensuring the reliability of infrastructure in both countries and of supporting a wide variety of initiatives in communities where their members live. As part of that tradition, UA Local 170 recently donated \$200,000 toward the Engineering Student Centre (ESC) at UBC.

The donation will improve the quality of life and education for Applied Science students on campus by providing much-needed study and collaboration space and will highlight the close working relationship between tradespeople and engineers. A display within the ESC's First Year Lounge will showcase the Local's work and demonstrate how the work of engineers and tradespeople intersects.

"We are extremely appreciative of the Local's support for our students through their contribution to the Engineering Student Centre," says Dean Marc Parlange. "Many of our graduates will work closely with tradespeople throughout their careers, and it is important that our students understand how their work complements the work of others. This partnership will support a major UBC Engineering priority project and allow us to expand on a vital part of our students' education."

"UA Local 170 has a proud and long history of supporting education, health and community in BC," says Joe Shayler, Business Manager and Financial Secretary for the Local. "We are pleased to support higher education and UBC, and it's an added bonus that we can showcase our work to the engineers of tomorrow."

UA Local 170 was chartered by the UA in 1898 for jurisdiction in BC and has worked in BC for over 116 years. One of its earliest projects in Vancouver involved laying a pipe across the First Narrows to provide Vancouver with fresh water from the Capilano River. ■

## ALUMNI

## Fond memories inspire UBC Engineering and Education alumni to give back

UBC alumni C.V. Chung (BASc '68 ELEC), his wife, Chiyeko (BEEd '66), and son, Aaron (BASc '96 MECH), have made a generous donation toward the Engineering Student Centre (ESC). The family's gift will support engineering students across Applied Science in developing interdisciplinary collaborations by providing a flexible study space for group work.

The Chung family notes that the "vibrant, collaborative and memorable academic and social culture" at UBC inspired them to give: "We are thrilled to be a part of this landmark opportunity to support tomorrow's engineering students. The Faculty has grown so much since we attended UBC, and it is our hope that the ESC will be a place that all engineering students and alumni can call home." The Chung family believes strongly in the ESC and volunteered to help Applied Science with fundraising by approaching classmates to encourage

them to support the project and its goals.

As a student at UBC, C.V. was heavily involved in the Engineering Undergraduate Society, and it was at UBC that he met Chiyeko. After he graduated, his career took the family to Los Angeles and San Jose, before the family settled in Bellevue, Washington, where C.V. worked for Puget Sound Energy, Tacoma Power and Seattle City Light, Seattle's municipal utility.

Since his retirement, C.V. has supported Applied Science by volunteering with the UBC alumni community in Washington state. He most recently sponsored and organized the successful UBC Engineering Alumni Lunch & Learn program in September 2014 for alumni in the greater Seattle area. With UBC graduates from '43, '50, '68, '81, '97 and '12 in attendance, the event allowed local alumni to connect over lunch, meet Dean Marc Parlange and take part in a financial-planning seminar.

The Faculty sincerely thanks the Chung family for their support as volunteers and as committed alumni and for their contributions to Applied Science's much-anticipated student centre. ■

## RESEARCH

## Engineering welcomes new and renewed Canada Research Chairs funding

Engineering research in solar-energy conversion and nanofibre technology received a boost, thanks to the federally funded Canada Research Chairs program.

Associate Professor Curtis Berlinguette in Chemical and Biological Engineering was appointed as the new Chair in Solar Energy Conversion. Berlinguette leads a research team designing new materials to convert sunlight into electricity and finding economically viable ways to store the energy in clean hydrogen fuels. The Tier 2 Canada Research Chair provides \$100,000 in funding annually over five years.

Materials Engineering Professor Frank Ko's Canada Research Chair in Advanced Fibrous Materials was renewed. His research in nanofibre technology focuses mainly on the design, characterization and manufacturing of multifunctional nanocomposite fibres and is helping advance biotechnology, neuroscience, microelectronics and nanoscience research. The Tier 1 Canada Research Chair renewal provides \$200,000 annually for seven years.

The new and renewed chairs within Applied Science are among the 16 announced recently at UBC, valued in total at \$11.6 million. UBC now has 186 Canada Research Chairs, the second-highest number of any university in the country. ■

## RESEARCH

## Innovate 2014 — inspire, invigorate and ignite



Professor Naoko Ellis, P.Eng., speaks at Innovate 2014.

Ten UBC Applied Science faculty members delivered passionate Pecha Kucha-style talks of less than seven minutes each to a packed house for Innovate 2014. Centered on bringing applied research to the community, Innovate 2014 sparked plenty of dialogue, from architecture to bioenergy to earthquake engineering.

Materials Engineering Professor Anoush Poursartip, P.Eng., started off the evening by discussing his work with composite materials, which led him to partner with Boeing; together, they now develop better-crafted, lighter and affordable airplane materials.

With the mission to transform B.C.'s forest sector into a vibrant bioproducts industry, Mechanical Engineering Professor and Applied Science Associate Dean James Olson (BSc '89, BAsC '91 ENPH, PhD '96 CHML), P.Eng., elaborated upon his exciting research on advanced materials and products from natural "green" biopolymers.

Chemical and Biological Engineering (CHBE) Professor David Wilkinson (BAsC '78 CHML), P.Eng., and School of Engineering Director Rehan Sadiq, P.Eng., of UBC's Okanagan campus focused on the lifeblood of the planet — water. Wilkinson spoke about his work on electrochemical processes to deliver clean energy and water, and Sadiq discussed his research on sustainable water infrastructure and management practices.

Fuelled by her passion for a cleaner future, CHBE

Professor Naoko Ellis (PhD '03 CHML), P.Eng., detailed her efforts to harvest energy from waste, including converting used cooking oil into biofuel.

Mining Engineering Associate Professor and Head Scott Dunbar (BSc '72 Geophysics), P.Eng., questioned whether a mine has to be a big hole in the ground and described a number of alternatives for metal extraction involving less-disruptive biotechnologies.

Electrical and Computer Engineering (ECE) Professor John Madden (BSc '91 PHYS), P.Eng., painted a vision of a bionic future, showing powerful artificial muscles crafted from fishing line and sewing-thread fibres.

Driven to make computer systems reliable, ECE Associate Professor Sathish Gopalakrishnan, P.Eng., described his Holy Grail quest to determine whether computer systems will work faultlessly in real-time.

School of Architecture and Landscape Architecture Assistant Professor Matthew Soules (BA '99) gave a taste of his research, "asset urbanism" — the idea that buildings are now primarily used as investment pieces, resulting in empty "ghost estates" and "zombie hotels" that are transforming the global landscape.

Ending the night, Civil Engineering Professor and earthquake engineer Carlos Ventura, P.Eng., asked, "What are we going to do to prevent the 'Big One' from becoming catastrophic?" Having recently pioneered the earthquake early-warning system in B.C. schools, Ventura talked about his innovative work to keep the public safe. ■

To view the presentations and photos and learn how to collaborate, visit [innovate.apsc.ubc.ca](http://innovate.apsc.ubc.ca).

## FACULTY

## Attracting the best and the brightest

*Admissions, outreach and new international exchanges*



Goldcorp Professor for Women in Engineering Sheryl Staub-French leads outreach.

Coming from across B.C., Canada and 58 countries around the world, this fall's first-year UBC Engineering class entered with an all-time high admission average of 92 per cent.

"UBC Engineering is focusing on promoting engineering as a creative, rewarding profession that designs solutions for people, and we're partnering on outreach to groups historically underrepresented in engineering," says Elizabeth Croft, P.Eng., Associate Dean, Education and Professional Development and NSERC Chair for Women in Science and Engineering. "Diversity is an important part of attracting the best and brightest students to UBC Engineering."

As Engineers Canada predicts a looming shortage of engineers by 2020, introducing young women to engineering as a career option is essential to filling the workforce gap. UBC Engineering aims to increase the number of women enrolled in its undergraduate programs from the national average of 20 per cent to 50 per cent over the next five years. Women comprise 29 per cent of this year's entering class, up from 24 per cent in 2013.

"It's an ambitious goal and one we will achieve,"

says Applied Science Dean Marc Parlange.

"Admission to UBC Engineering will continue to be based on the highest competitive averages, coupled with personal profiles that help us identify truly outstanding students. We want to encourage all young people with aptitude in math and science to consider engineering."

This fall, UBC Engineering co-hosted Go Eng Girl outreach for Grade 9 girls and a professional development day for Grades 6 and 7 teachers, providing a hands on introduction to engineering. UBC Engineering Open House 2014's *Engineers Save the World* showed more than 1,400 visitors how engineers help prevent disease, reduce poverty and create solutions to protect people and our planet.

UBC Engineering is also increasing the opportunity for student professional experiences, with the goal of having 40 per cent take place internationally. The faculty signed Coordinated International Experience letters of intent with the Technical University of Denmark, Delft University of Technology and École Polytechnique Fédérale de Lausanne this fall. UBC Engineering students will have the opportunity to study full time as an exchange student for one or two semesters and receive a certificate recognizing their coursework at their exchange institute. The exchanges are slated to begin in January 2016. ■

## EDUCATION

## UBC engineers embrace new tradition: Iron Pin Ceremony marks commitment to professionalism from the start



Front: 2014 Engineering Undergraduate Society Executive, Vancouver. Back: Founding supporters of the Iron Pin ceremony.

More than 2,400 students, faculty and staff participated in the Iron Pin Ceremonies held in November, promising to abide by UBC's Engineering Code of Ethics. The new tradition, launched this year by the UBC Engineering Undergraduate Society (EUS) on the Vancouver campus, marks each student's entrance into the path of a professional course of study and commitment to abide by a code of ethics. The ceremony also serves to welcome new students as UBC engineers.

Engineers adhere to a code of ethics that guides them through personal and professional decisions. The code is integrated into an engineer's professional journey from the Iron Ring Ceremony upon graduation to the Association of Professional Engineers and Geoscientists of BC (APEGBC) Code of Ethics. Ethics are not only

important to professional engineers but also play a large role in the lives of engineering students.

"Last year, as part of our inclusivity initiative, the EUS started to address the lack of early education surrounding this important aspect of our profession," says EUS President Veronica Knott. "With the support of the Faculty of Applied Science, we have been working to develop the Iron Pin Ceremony and intend this ceremony to become a symbol of each student's entrance into the profession and being a UBC engineer. This will become an annual tradition to welcome all incoming students into the UBC Engineering community with a pin marked by their entrance year."

The UBC Engineering Code of Ethics is adapted from the APEGBC Code of Ethics to be relevant to students. Student executives from the School of Engineering undergraduate society attended the ceremony in Vancouver and plan to establish their own ceremony in the Okanagan. For alumni interested in partaking in the Iron Pin Ceremony, there will be an opportunity at Old Red New Red; see p. 23 for details. ■

## FACULTY

## Civil Engineering's "Sigi" Stiemer retires



Civil Engineering Professor  
Sigi Stiemer, P.Eng.

After 33 years with the Department of Civil Engineering, Professor Siegfried "Sigi" Stiemer, P.Eng., is retiring.

Stiemer's journey as an engineer began in Germany, where he earned master's and PhD degrees in aeronautical engineering at the University of Stuttgart. He stayed at the university for a few years as a faculty member before making his big move across the Atlantic, accepting a research-engineer position at the University of California, Berkeley, in 1979.

Two years later, desiring a change in location but smitten with the Pacific Northwest, Stiemer moved further up the coast to a place he'd call home for the next 33 years — UBC.

During his years in Civil, Stiemer saw many changes: he experienced the revolutions brought by the introductions of the microcomputer, including the rise of Apple and IBM computers, and several changes in the university system and his own research area.

Although he began in aeronautical engineering, Stiemer explains that because aeronautical-engineering jobs were hard to come by, he started instead specializing in base isolation, microcomputers, programming and adaptive structures. His specific passion became high-precision structures in steel.

Stiemer was involved in many projects; one that he especially enjoyed involved designing and building

eight massive optic telescopes at Mauna Kea, Hawaii, a place where the dry, unpolluted air above the dormant volcano is ideal for astronomical observations.

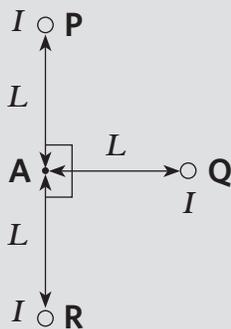
For the past 30 years, Stiemer has worked with UBC Civil Engineering Adjunct Professor David Halliday, P.Eng., at Empire Dynamic Structures, a local steel fabricator known for its complex structures and amusement-park ride designs. One of the most recent projects Stiemer contributed to involved designing the robot-controlled "Harry Potter and the Forbidden Journey" ride that is now in operation at Universal Studios in Florida and Japan.

Throughout his career, Stiemer has been recognized with many awards, such as the Canadian Society of Civil Engineering's E. Whitman Wright Award, the Fulbright scholarship, the Alexander von Humboldt fellowship and, most recently, the Canadian Institute of Steel Construction 2013 Lifetime Achievement Award.

However, for all the accolades he's received, Stiemer says that what he will remember the most are the people whose lives he has tried to make a difference in. Having always striven to teach his students to think and work like real engineers, Stiemer says that it is particularly rewarding to have students return and say, "Ah, it was quite useful what you taught me. At the time you taught us, we didn't believe you, but it was good." That's the fun part, when they say that."

Stiemer is still in contact with many of his former students. Some of them now work alongside him at Dynamic Structures, and he adds, "When I go there, it's like family." ■

## Parallel wires problem



Think you could still pass an Engineering exam? We've included a question below from a first-year midterm exam to test your skill! Send in your answer to [alumni@apsc.ubc.ca](mailto:alumni@apsc.ubc.ca) to be entered to win a UBC Engineering prize if you answer correctly!

The figure shows the cross-section of three parallel wires — **P**, **Q** and **R** — in a vacuum. Each wire has infinite length and carries current **I** in the same direction. Given that the permeability of free space is  $\mu_0$ , find an expression for the magnitude of the magnetic flux density **B** at point **A**.

UBC Applied Science congratulates P. Paterson (BASC '97), winner of the Test Your Metal quiz in the last edition of *Ingenuity*. To see the solution to the Test Your Metal quiz, visit: [engineering.ubc.ca/ingenuity-solutions](http://engineering.ubc.ca/ingenuity-solutions).

## FACULTY

## Awards &amp; Achievements

**CHEMICAL AND BIOLOGICAL ENGINEERING**

Associate Professor **Curtis Berlinguette** has been appointed the new Canada Research Chair in Solar Energy Conversion for a five-year term, effective October 16, 2014.

**Professor David Wilkinson** (BASc '78 CHML), P.Eng., has been inducted as a fellow of the Royal Society of Canada.

**CIVIL ENGINEERING**

Professor **Tarek Sayed**, (MASc '92, PhD '95 CIVL), P.Eng., was awarded the 2014 Academic Research Centennial Road Safety Award from the Transportation Association of Canada for his road safety achievements.

Professor Emeritus **Siegfried Stiemer**, P.Eng., was awarded the 2013 Lifetime Achievement Award by the Canadian Institute of Steel Construction (CISC).

Assistant Professor **Tony Yang**, P.Eng., was awarded the CISC 2014 H.A. Krentz Research Award.

**ELECTRICAL AND COMPUTER ENGINEERING**

Associate Professor **Purang Abolmaesumi** (PhD '02 ECE), P.Eng., was awarded the 2014 Killam Award for Excellence in Mentoring.

Associate Professor **Alireza Nojeh**, P.Eng., was named a 2014 Peter Wall Institute Scholar.

Associate Professor **Konrad Walus**, P.Eng., **Dr. Sam Wadsworth** and Electrical and Computer Engineering graduate students **Simon Beyer** (BASc '09, MASc '11 ECE) and **Tamer Mohamed** (BASc '11 ECE), with an advisory group from entrepreneurship@UBC, earned second place in the BCIC-New Ventures Competition for their 3D biological-tissue start-up Aspect Biosystems.

**MATERIALS ENGINEERING**

Professor **Frank Ko** has been renewed as the Canada Research Chair in Advanced Fibrous Materials for another seven-year term, effective October 16, 2014.

Professor **Daan Maijer**, (BASc '94, PhD '99 MMAT), P.Eng., has been reappointed Program Director of Integrated Engineering for a three-year term, effective July 1, 2014.

Department Head and Professor **Warren Poole**, P.Eng., Rio Tinto Alcan Chair in Materials Process Engineering, has been awarded the International Magnesium Association 2014 Award of Excellence for the entry "Low Temperature Warm Forming of Magnesium 'Elektron®717' Sheet for Deep Drawn Automotive Panels."

Professor **Anoush Poursartip**, P.Eng., received the Wayne W. Stinchcomb Award from ASTM International Committee D30 on Composite Materials for his contributions to materials research.

**MECHANICAL ENGINEERING**

Professor and Associate Dean for Education and Professional Development **Elizabeth Croft** (BASc '88 MECH), P.Eng., was named one of 2014 Canada's Most Powerful Women by the Women's Executive Network.

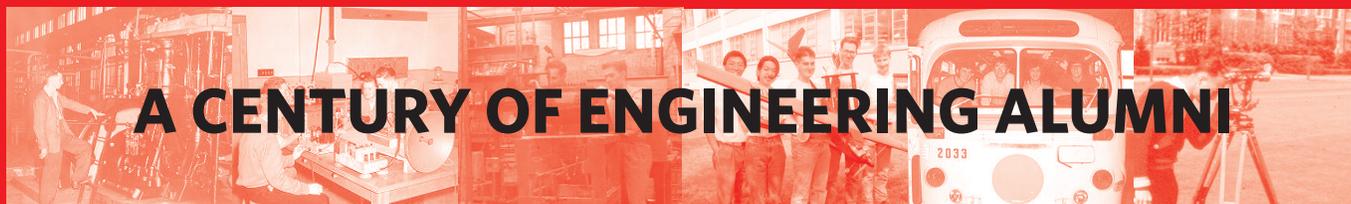
Professor and Associate Dean for Research and Industrial Partnerships **James Olson** (BSc '89, BASc '91 ENPH, PhD '96 CHML), P.Eng., received the Meritorious Achievement Award from the Association of Professional Engineers and Geoscientists of BC for his technical and leadership accomplishments in BC's paper and pulp industry.

**MINING ENGINEERING**

Professor **John Meech**, P.Eng., has been awarded the Fray International Sustainability Award for his leadership of UBC-CERM3's sustainable-mining research.

**SCHOOL OF ENGINEERING**

Associate Professors **Kasun Hewage**, P.Eng., **M. Shahria Alam**, P.Eng., and **Cigdem Eskicioglu**, P.Eng., and Professor **Rehan Sadiq**, P.Eng., and **Muluken Yeheyis** (PhD '08 CIVL, ENVE), P.Eng., received the Best Paper Award of 2013 from the journal *Clean Technologies and Environmental Policy* for their paper, "An Overview of Construction and Demolition Waste Management in Canada: A Lifecycle Analysis Approach to Sustainability." ■



## A CENTURY OF ENGINEERING ALUMNI

This year, 2015, is the 100th anniversary of UBC's first class of students — and Applied Science was there at the start as one of the three founding faculties. As part of UBC's larger centennial celebration, the next issue of *Ingenuity* will include a special feature on our 100 years of Engineering, with profiles of alumni through the decades and photos of engineering on campus — labs, classes, buildings, engineering events and everything in between.

We want your submissions! What would you like to see? What photos can you share with us? What are your favourite memories? Send us your ideas to [alumni@apsc.ubc.ca](mailto:alumni@apsc.ubc.ca) by March 31, 2015 — and tune in next issue to wax nostalgic about your time at UBC.

UBC Applied Science Alumni Relations, Chemical & Biological Engineering Building, 290 – 2360 East Mall, Vancouver, BC, V6T 1Z3

# Our People



Electrical and Computer Engineering alumnus Vikram Devdas.

Vikram Devdas (BASc '95, MASc '99 ECE) has a passion for innovation. He started his first company at age 26 and hasn't stopped innovating since. But his next mission has a new twist: he wants to help Vancouver — and UBC — become a technology powerhouse to rival Silicon Valley.

"Silicon Valley has a great ecosystem, and it began because people from nearby Stanford and UC Berkeley started companies. Those companies then invested back into the universities, and it became a virtuous cycle," he says. "UBC has students and professors already making major technical innovations, but we need companies and investors to build an innovation hub." To help move this innovation-hub idea forward, Devdas recently joined the Industry Advisory Council for UBC's Department of Electrical and Computer Engineering (ECE). He has also been helping out with networking in Silicon Valley to help connect ECE faculty and students with venture capitalists in order to encourage entrepreneurship in Vancouver.

Devdas' expertise in the industry grew from a wide range of experience. In the 15 years since he left UBC, his career has encompassed positions at PMC-Sierra, Cisco, Hewlett-Packard and Texas Instruments, carrying him from Vancouver to Silicon Valley to Texas and back to Vancouver — not to mention three companies that he founded or co-founded and which were subsequently sold. His newest venture is a start-up called UrHealthMon, which is tapping into the aging baby-boomer market by providing people with small, wearable monitors that can track their movements and vital signs, allowing people to live at home safely for longer.

## ALUMNI

### Alumnus and entrepreneur Vikram Devdas envisions UBC and Vancouver as the new Silicon Valley

Devdas attributes his success to a number of things — a stable family life, hard work and perseverance — but also to his time at UBC. "UBC is like a second home to me. I was lucky enough to come to a good school with good professors, but also to a place where I met many friends and enjoyed a lot of social activities. I'm still in touch with many of those people I met here as a student," he says. He counts ECE Professor and Head Andre Ivanov, P.Eng., as one of his personal role models.

And it is for these reasons he wants to give back. "I love new things and new experiences, and entrepreneurship is a passion," he says. "I want to help young people be entrepreneurs, and I know that if we can help even three to five companies a year — and those companies become successful and give back to UBC — this will be a tremendous legacy for our generation." Many engineers, he notes, got their start at UBC, and UBC was the foundation for their success. "It's our responsibility to give back," he says.

For today's students, Devdas says, engineering is a particularly great profession because much of the major innovation in coming years will be spurred by engineers who are trained as creative problem solvers. Learn from the faculty, he urges, and then stretch your imagination beyond this by looking at other areas such as arts and medicine, and bring your new knowledge back to integrate with what you learn in the classroom. Most importantly, he says, "Don't be afraid of failure! Tinker, create, build things and keep persevering — that's where innovation comes from." ■

# Alumni Updates Event Highlights



## SIXTY-FIVE YEARS OF CIVL '49

On September 17, 2014, the Civil Engineering Class of 1949 celebrated 65 years of tradition, camaraderie and memories. This extraordinary group of alumni have held reunions, organized by fellow classmate Knute Soros, every year since they graduated. And as they enjoyed lunch while trading stories, jokes and jabs around a large table at the Beach Grove Golf Club in Delta, B.C., this fall, it almost seemed as though no time had passed since their student days.

Although the number of attendees has dwindled over the decades, eight alumni were able to attend this year, and all eight brought along spouses, children and even grandchildren to swell the numbers. "Most of us are now at the point that we need drivers, but we still like to make the effort to see each other each year," says Soros, who brought along his son Ross and his granddaughter Kelly (BSc '10, BSN '12). "Some even make the journey from Vancouver Island and Washington state."

As he does every year, Soros provided an update on the UBC Civil Class of 1949 Bursary, which the class collectively established five years ago in celebration of their 60th reunion. The endowed bursary

reflects the unique mix of students in their class, many of whom were veterans who had recently returned to civilian life after World War II. Several members of the class still contribute annually to the growth of the bursary, bolstering its ability to assist bright future engineers in achieving their educational goals. So far, the award has supported 14 undergraduate Civil Engineering students who have demonstrated financial need.

Although six decades have gone by since their graduation — a time that has seen many changes and, sadly, the loss of many of their former classmates — the Civil Class of 1949 remains resolute, voting unanimously to continue their annual get-together beyond this 65th year.

On behalf of the Faculty of Applied Science, we hope that there will be many more reunions for the indelible CIVL '49 class. ■

*For information on how to contribute to the UBC Civil Class of 1949 Bursary, please contact Jonathan Doan, Development Officer for the Faculty of Applied Science, at [jonathan.doan@ubc.ca](mailto:jonathan.doan@ubc.ca) or 604-827-4879.*

**CIVL '69 REUNION**

JUNE 25, 2014

Members of the Civil Engineering Class of 1969 gathered together on a sunny summer afternoon to have a low-key 45th reunion at Sage Bistro on the UBC Campus. The “old faculty club” didn’t mind the red-jacket attire, and a campus tour gave the alumni a feel for what has changed on campus since they were last on site nearly 45 years ago! Planning has already started for the 50th reunion in a few years, but for now the group will continue with their annual lunch tradition. Many thanks to Richard Fraser (BASc '69 CIVL) and Doug Neden (BASc '69 CIVL) for organizing.

**ECE RESEARCH DAY IN SILICON VALLEY**

JUNE 25, 2014

On June 25, five Electrical and Computer Engineering faculty members, accompanied by ECE Professor and Head Andre Ivanov, P.Eng., travelled to Silicon Valley to present at ECE’s inaugural Research Day, sharing hot-topic presentations on the latest ECE research. Over 100 alumni and local industry professionals travelled to host corporation Applied Materials to hear Professors Sudip Shekhar, Karen Cheung, P.Eng., Tor Aamodt, P.Eng., Sathish Gopalakrishnan, P.Eng., and Alireza Nojeh, P.Eng., speak and to enjoy Q&A sessions and networking. The event was such a success that ECE is planning another Research Day next spring — stay tuned to our events calendar.



**UBC MARGOLESE DESIGN FOR LIVING PRIZE LECTURE — TORONTO**

SEPTEMBER 10, 2014

Applied Science graduates from Architecture, Engineering and Nursing gathered in Toronto to hear renowned architect Bing Thom (BArch '66) give a lecture for the UBC Margolese National Design for Living Prize. The award, valued at \$50,000, recognizes a Canadian who has made outstanding contributions to the development or improvement of living environments for Canadians of all economic classes. Bing spoke about his passion for living spaces and entranced the audience at the Design Exchange.



**CLEAN ENERGY ENGINEERING ALUMNI & STUDENT NIGHT**

SEPTEMBER 16, 2014

A mix of CEEN alumni and current students gathered at UBC Robson Square on September 16th for the third annual CEEN Alumni & Students Night. The evening’s program featured keynote speaker Dr. Christian Doetsch, Division Director Energy, Fraunhofer UMSICHT, Associate Professor Walter Mérida, P.Eng., Director of UBC Clean Energy Research Centre, and UBC Instructor Vladan Prodanovic, P.Eng., engaged the audience in a Q&A on the new direction of the CEEN program. Professor David Wilkinson, P.Eng., presented a warm farewell tribute to UBC Power Smart® Instructor Eric Mazzi, P.Eng., in thanks for his years of work with the CEEN program at UBC.

**1974 ALL DEPARTMENTS 40TH REUNION**

SEPTEMBER 19-20, 2014

The UBC Engineering Class of 1974 recently held two 40-year reunion events: a beer night on September 19 at the Arbutus Club, and a buffet dinner at the University Golf Club.

A total of 68 class members and 21 partners attended the events. More than half now live outside the Metro Vancouver area, with many coming from outside B.C. and a few from outside Canada. The grads travelling the farthest for the event were Paul Olthof (BASc Ag '74) and Doug Nicholson (BASc MECH '74), P.Eng., who took the Columbus Award for crossing the Atlantic from Ireland and Scotland, respectively, and Dave Tompkins (BASc CIVL '74), presented with the Magellan Award for crossing the Pacific from New Zealand.

Attendees enjoyed themselves immensely and were divided about whether to hold the next reunion in five years or 10.

The dates and venues had been chosen nearly a year in advance by Janet Calder (BASc '74 MTRL), P.Eng. Janet drew together a committee — including Doug Aldridge (BASc '74 ELEC), Ian Isbister (BASc '74 CHEM), P.Eng., and '74 CIVLs Randy Heys, Vince Knight, P.Eng., and Rick Knowlan — to help plan the event.

*Submitted by Rick Knowlan (BASc '74 CIVL, MBA '85)*



**CHML '74 REUNION**

SEPTEMBER 19-20, 2014

On the weekend of September 19-20, 2014, the Engineering Class of 1974 (all departments) celebrated its 40th anniversary. The organizing committee did a tremendous job with a beer night reception at the Arbutus Club on Friday evening and then an excellent buffet dinner at the University Golf Club on Saturday night. Both events were well attended, and it was fulfilling to be back in touch with such a good group of grads.

Eleven of the original 25 Chemical Engineering grads from that year attended not only the Friday/Saturday activities but were also fortunate to have a personalized tour of the new Chemical & Biological Engineering Building. We particularly appreciated that Department Head and Professor Peter Englezos, P.Eng., took the time to provide a brief history and context to the changes in the department over the years, and it is gratifying to know that the department will be celebrating its 100-year anniversary next year. What an excellent facility for undergrads, grad students and faculty (although they had hidden the ping pong table so that we would not be distracted). Congratulations to the tireless efforts by the faculty to stimulate and prepare the current generation of Chemical and Biological Engineering students.

We were also most fortunate to enjoy a luncheon with three of our professors, now distinguished emeriti professors: Norman Epstein, P.Eng.; Richard Branion, P.Eng.; and Paul Watkinson, P.Eng. Their continued dedication and contribution to the Chemical and Biological Engineering Department and all the students over the years is certainly outstanding.

*Submitted by Barry Jessup (BASc '74 CHML)*

**MECH '84 REUNION**

SEPTEMBER 20, 2014

The Mechanical Engineering Class of 1984 gathered for a successful and slightly riotous 30th reunion at Mahoney & Sons Burrard Landing. Reds were on display, and a great time was had by all. Thanks to reunion organizers Young Yuen (BASC '85 ENPH) and Ivo Kokan (BASC '84 MECH), P.Eng.



**CLASS OF 1958 56TH REUNION**

SEPTEMBER 25, 2014

Nineteen enthusiastic members of the UBC Engineering Class of 1958 attended the 56th reunion lunch on September 25 at the West Vancouver Yacht Club. Vying for honours for coming the longest distance were Vince Borch, P.Eng. (Courtenay, B.C.), and Bob Irwin (Calgary via Victoria). The shortest distance was by Al Laird, P.Eng., who walked to the lunch from his home on Eagle Island. The annual grad lunches are organized by Ed Frazer, P.Eng., and Russ Fraser, P.Eng. The 57th reunion lunch is planned for September 24, 2015, at the West Vancouver Yacht Club.

*Submitted by Ed Frazer (BASC '58 ELEC), P.Eng.*

**PUGET SOUND ALUMNI EVENT**

SEPTEMBER 26, 2014

UBC Engineering ventured south of the 49th parallel for its first Puget Sound-area Engineering event in a long time. The event was organized in partnership with alumnus C.V. Chung (BASC '68 ELEC) and gathered a number of vintage alumni from the Classes of 1943 and 1950, as well as some newly minted alumni. Dean Marc Parlange enjoyed meeting the Seattle area grads and is already planning a trip back for 2015!



**ECE STUDENTS & ALUMNI NETWORKING NIGHT**

OCTOBER 22, 2014

Students and alumni of Electrical and Computer Engineering met on a very rainy November night at the Coppertank Grill for an evening of

mentorship and networking at the third ECE Students & Alumni Networking Night. A round-robin style networking event allowed for students and alumni to engage with a large number of participants throughout the evening. We welcomed alumni from an array of career backgrounds and graduation years. Thank you to all who participated in this year's event!



**METS '69 REUNION**

OCTOBER 22-24, 2014

When we were last together at Point Roberts in 2009, the idea was put forward to have the next reunion in Australia.

Back in 2012, emails started flowing, a Skype connection was made and a venue was eventually chosen at Binna Burra Mountain Lodge ([binnaburralodge.com.au](http://binnaburralodge.com.au)), as this was seen to be the most unique of the areas considered. The reminiscences started at a BBQ on Tuesday evening, where acquaintances were renewed after periods varying from a couple of months to the full 45 years.

On the following morning, the group reconvened and, complete with incorrect directions, set off in convoy to Binna Burra. Once there, the serious consideration of the activities on offer began. Over the next two days various members of the company walked the trails to view the scenery; spotted wildlife that was putting on a special display just for us; found the southern spring display of flowers; attended the nightly information sessions; managed to get up in time for early-morning yoga ("the door will be locked at 7:00 a.m." said the program); found the massage room; remembered long-forgotten professors, classes, fellow students, field trips, stunts and parties; but, most of all, got to know each other again after such a long time. Over a refreshment or two, it was suggested and agreed that the next reunion would be in Arizona, since there are several snowbirds who winter there. Looking forward to seeing every one in 2019 for the 50th.

*Submitted by Lloyd Akeroyd (BASC '69 METS)*



**CHBE INDUSTRY MIXER**

NOVEMBER 3, 2014

The Coppertank Grill played host to a group of Chemical & Biological Engineering students and alumni for the annual Industry Networking Mixer. Students were treated to a pre-networking session by Brent Lyon (BASC '96 CHML), P.Eng., who walked them through how to network. Students then were able to put their new skills to the test and interact with a number of industry and alumni throughout the evening's round-robin mentoring. This was the first year the industry night has taken place off campus, and all who attended enjoyed the evening.

**MECHANICAL ENGINEERING ALUMNI AND STUDENT NIGHT**

NOVEMBER 12, 2014

The annual fall Mechanical Engineering social night had a fantastic turnout of young and not-so-young alumni. Many students appreciated the diversity of industry representatives that attended and shared career insights while alumni enjoyed hearing how different student life is compared to 'back when.' The department will look to host a spring pub night in March 2015.



**CIVIL ALUMNI AND STUDENT NETWORKING NIGHT**

NOVEMBER 13, 2014

In an effort to connect with local alumni and industry, civil students hosted the inaugural Civil Alumni and Student Networking evening and enjoyed the opportunity to connect with industry colleagues and receive tips for university and professional life. We are hoping to continue this tradition next fall.

# 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 [apsc.ubc.ca/news-events/newsletters](http://apsc.ubc.ca/news-events/newsletters).

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## **GEOLOGICAL ENGINEERING ALUMNI DINNER**

*JANUARY 17, 2015*

UBC Geological Engineering cordially invites alumni and friends to attend the 13th annual Geological Engineering Alumni/Industry Dinner, to be held at the UBC Golf Club. Please join us for an evening of networking with industry colleagues and the next generation of UBC geological engineers! For more information about the event, including sponsorship or attendance, please contact Jessica Wilson at [georox.ubc@gmail.com](mailto:georox.ubc@gmail.com).

## **CSCE INDUSTRY NIGHT**

*JANUARY 22, 2015*

The UBC Student Chapter of the Canadian Society for Civil Engineering (CSCE) invites you to attend the 2015 Annual UBC-CSCE Industry Night at UBC. This event is a great opportunity for employers from various engineering disciplines to meet and network with current UBC Civil Engineering students. If your organization is interested in having representatives attend the event, please contact the UBC CSCE Student Chapter at [ubc.csce@gmail.com](mailto:ubc.csce@gmail.com) to receive an information package and a formal invitation.

## **UBC ALUMNI RECEPTION AT ROUNDUP 2015**

*JANUARY 27, 2015*

Attending the 2015 RoundUp Conference? The Faculties of Applied Science and Science invite you to attend a UBC Alumni Reception at RoundUp! Join us at Mahony & Sons Burrard Landing to reconnect and network with fellow delegates from UBC's Engineering and Science Faculties. Contact [alumni@apsc.ubc.ca](mailto:alumni@apsc.ubc.ca) for more information or to register.

## **MATERIALS ENGINEERING INDUSTRY NIGHT**

*JANUARY 29, 2015*

The seventh annual Materials Engineering industry night will be held at UBC, and all Materials Engineering alumni and industry partners are invited to meet and engage with current students. An interactive panel with materials-industry representatives will precede a networking reception with all guests. Contact Courtney Smith at [courtney.smith@ubc.ca](mailto:courtney.smith@ubc.ca) for more information.

## **MINING ALUMNI DINNER**

*JANUARY 31, 2015*

Join fellow Mining alumni at the 19th Annual Mining Alumni Dinner. This year's event, at the Four Seasons Hotel Vancouver, will feature a keynote speaker to be announced in January. Tickets can be purchased online at [regonline.ca/ubcmineralumnidinner2015](http://regonline.ca/ubcmineralumnidinner2015).

## **OLD RED NEW RED**

*FEBRUARY 5, 2015*

Historically held on the Thursday of "Engineering Week," Old Red New Red provides our alumni with the opportunity to reconnect with the UBC campus and community. For current engineering students, Old Red New Red is an opportunity to meet alumni from different generations, to learn about the history of UBC and the Engineering Undergraduate Society and to discover what student life was like in years past. Dig out those Reds and save the date for 2015 to join your colleagues, friends and family for a fun and social evening. As part of this year's program, we'll include a special Iron Pin Ceremony for those who wish to participate in this new tradition (featured on p. 15). Many alumni have already expressed interest in being part of this new initiative.

## **ENGINEERING EXPLORATIONS 10**

*MARCH 28, 2015*

An exciting day of exploration for Grade 10 girls! Get creative and participate in fun engineering activities. Tour engineering labs. Connect with other like-minded students. Talk to current engineering students and professors who will share their stories and experience. Discover a career path to engineer a new world. For more information, please visit: [engineering.ubc.ca/connects](http://engineering.ubc.ca/connects).

## **ECE CAPSTONE CELEBRATION**

*APRIL 9, 11 A.M.-3 P.M.*

Join us to help celebrate the innovation Electrical and Computer Engineering graduating students demonstrate in their Capstone projects. Students showcase their work through prototypes, videos and posters. Our community, industry and campus partners and faculty members will also be on hand to discuss the projects. Everyone is welcome. Students work on problems defined by an industry partner for two terms; ECE Capstone projects allow students to demonstrate the knowledge and the skills they learn during their degree work, solve an open-ended engineering problem and design a significant product/service. We are very excited to show you the results. More details are available at [ece.ubc.ca/capstonepartners](http://ece.ubc.ca/capstonepartners).

## **INTEGRATED ENGINEERING PROJECT SHOWCASE**

*APRIL 8, 2015*

The annual Integrated Engineering Project event showcases innovative and multidisciplinary engineering design projects. Come learn about this exciting program, network with students and faculty members and see some of the exciting projects this year's student groups have put together. Visit: [igen.ubc.ca](http://igen.ubc.ca).

## **ENGINEERING EXCELLENCE**

*APRIL 9, 2015*

Join UBC Engineering as we celebrate the remarkable achievements of our engineering community at the 2015 UBC Engineering Excellence Awards. Awards will be presented in the categories of Outstanding Future and Young Alumnus, Community Leadership, Lifetime Achievement and Outstanding Emeriti Faculty. Read biographies of current and past recipients, nomination criteria and how to attend the event at [apsc.ubc.ca/engineeringexcellence](http://apsc.ubc.ca/engineeringexcellence).

## **ENGINEERING PHYSICS SOCIAL NIGHT**

*APRIL 2015*

EngPhys will once again convene to celebrate student achievement, new graduates and their alumni community. Please stay tuned and check your email for your invitation.

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**COURSE: INTRODUCTION TO PULP AND PAPER TECHNOLOGY**

APRIL 2015

This multiple-day introductory-level course, sponsored by the Advanced Papermaking Initiative at the UBC Pulp and Paper Centre, is suitable for current engineering students and recently hired engineers working in pulp and paper mills and supporting industries. It is also suitable for both technical and nontechnical individuals who want to understand the basics of one of B.C.'s natural resources, chemical and mechanical pulping, bleaching, recovery, papermaking and paper grades and properties. This hands-on course consists of morning lectures and afternoon lab exercises to re-emphasize the material and enhance the understanding of various processes. To view course and registration information, please visit: [www.ppc.ubc.ca/advanced-papermaking-initiative/intro-to-pulp-and-paper-technology](http://www.ppc.ubc.ca/advanced-papermaking-initiative/intro-to-pulp-and-paper-technology).

**ALUMNI WEEKEND**

Alumni Weekend, typically scheduled each spring, will be postponed for 2015. Some of the activities planned over the course of 2015-16 include educational and family-friendly activities. Alumni Weekend will return May 27-29, 2016, to cap off our year of UBC Centennial celebrations. Stay tuned for more details!

**WEST: WATER & ENVIRONMENT STUDENT TALKS**

JUNE 7-9, 2015

WEST is a student-organized conference for students and young professionals in the Pacific Northwest to share their work on water-related issues. This annual interdisciplinary event will feature a wide diversity of subjects and guest speakers to expose participants to the many facets of our water resources, including topics on water policy, wastewater, drinking water and hydrology. The conference will be held at UBC Vancouver and will cost approximately \$50 for students. To learn more about registration and submitting abstracts, visit: [west-conference.ubc.ca](http://west-conference.ubc.ca).

**ICSC15 — THE CSCE INTERNATIONAL CONSTRUCTION SPECIALTY CONFERENCE**

JUNE 8-10, 2015

The Canadian Society for Civil Engineering (CSCE) Specialty Conference (ICSC15) provides the opportunity for researchers and practitioners of construction around the world to share the most recent innovations and developments in the construction industry. Conference themes include Building Information Modeling, Asset Management/Infrastructure Management, Project Management, Construction Engineering and Management, IT Applications, Modular Construction, Sustainable Construction, Construction Education, and Construction Case Studies. For more details, visit: [icsc15.engineering.ubc.ca](http://icsc15.engineering.ubc.ca).

**EESD15: INTERNATIONAL CONFERENCE OF ENGINEERING EDUCATION FOR SUSTAINABLE DEVELOPMENT**

JUNE 9-12, 2015

The 2015 Engineering Education for Sustainable Development (EESD) conference will explore current and future ways of thinking in this emerging field. Conference themes include the history of EESD; the current and near-future EESD body of knowledge; EESD for graduate students; EESD and green technology; trans-disciplinarity; leadership; EESD, the humanities, and the social sciences; retrofitting engineering education; and EESD assessments and continual improvement. A special off-campus stakeholder afternoon on June 11 will support conversations between groups impacted by engineering practice. For sponsorship and exhibition opportunities, contact [sponsorship@eesd15.engineering.ubc.ca](mailto:sponsorship@eesd15.engineering.ubc.ca). More event information is available at [eesd15.engineering.ubc.ca](http://eesd15.engineering.ubc.ca)

**PULP AND PAPER TECHNICAL INDUSTRY TRAINING COURSE**

VARIES THROUGHOUT YEAR; CHECK WEBSITE FOR UPCOMING DATES

New this year, the Technical Industry Training Course is a three-day, hands-on course conveniently offered at the Pulp and Paper Centre on the UBC Vancouver campus. Comprising theoretical lectures, demonstrations and videos, learning will be reinforced by building a project

from start to finish using industry-standard tools and methods. The course instructor is a Certified Machinist and Engineering Technician. To view the course overview, upcoming course dates and other registration information, please visit: [ppc.ubc.ca/professional-development/](http://ppc.ubc.ca/professional-development/).

**UBC APPLIED SCIENCE IS TURNING 100!**

SEPTEMBER 2015

UBC is looking pretty good for a centenarian, and we are already planning a big bash. Please stay tuned for UBC's Centennial celebrations, which will kick off in September 2015, 100 years after the first group of UBC students entered UBC, and will be highlighted in May 2016 when we celebrate the anniversary of the first graduating class!

**MATERIALS ENGINEERING CENTENNIAL CELEBRATION**

OCTOBER 2, 2015

Save the date! Materials Engineering will be celebrating 100 years since its founding. Keep an eye on your email and [engineering.ubc.ca/alumni](http://engineering.ubc.ca/alumni) for more information as it becomes available in the spring.

**ALUMNI ENGAGEMENT**

The Faculty of Applied Science is committed to keeping in touch with its alumni. Whether it is helping you organize a class reunion, connecting you with long-lost classmates, engaging you in faculty and student activities or simply keeping you abreast of your alma mater through the web, newsletters or regional events, Applied Science is pleased to help. Please contact the Applied Science Alumni Relations team for more information at [alumni@apsc.ubc.ca](mailto:alumni@apsc.ubc.ca).

**REUNIONS**

If you would like more information on upcoming reunions or are interested in organizing one, please email [courtney.smith@ubc.ca](mailto:courtney.smith@ubc.ca) in the Alumni Relations office for more information.



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