

ENGINEERING

8 | FALL 2014 MORE THAN ONE HUNDRED YEARS OF TEACHING AND RESEARCH EXCELLENCE

OCEANS AND COASTLINES

DAL ENGINEERS ARE
MAKING WAVES



DALHOUSIE
UNIVERSITY

FACULTY OF ENGINEERING

FROM
THE DEAN



The past year has been a tremendous one for Dal Engineering. We are literally bursting at the seams with engineering students. We received over 2000 applications, from across Canada and around the world. From those, we made 560 offers of admission for our 360 first year spots, and when the dust settled, 469 students showed up for the first day of class, on September 4.

While there was a certain amount of panic behind the scenes, the process has been smooth. This is due to the excellent work of Associate Dean, Dr. Cyrus, his team, and the exceptional collaboration we have with the Faculty of Science.

Although we continue to struggle with space, things are moving along smoothly. We have welcomed some excellent new professors and have launched a number of important new initiatives. Premier McNeil was on campus this fall to announce funding for and to open the Innovation, Design, and Entrepreneurship Academy. The IDEA Sandbox is a small business incubator designed to help students launch new businesses.

We hope you enjoy this issue of *Engineering*, and look forward to seeing you at upcoming alumni events. We would also like to wish you and your families all the best for 2015.

Joshua Leon, Dean,
Faculty of Engineering

Her passion for oceans runs deep

OCEAN ENGINEER DR. KATHRYN (KATE) MORAN IS AT THE FOREFRONT OF OCEANS OBSERVING TECHNOLOGY

Kate Moran (PhD'95 Civil) has had a pretty extraordinary career in the oceans sector. Not only has she headed several major oceanographic expeditions, including the first drilling expedition to the Arctic Ocean, she also advised the White House in its response to the 2010 Deepwater Horizon Oil Spill in the Gulf of Mexico.

It was an instance of being in the right place at the right time for Moran. A professor of oceanography and Associate Dean of the Graduate School of Oceanography at the University of Rhode Island, she had been seconded in 2009 to the Office of Science and Technology Policy where she focused on oceans, the Arctic and global warming.

"I started writing short briefing notes to the science advisory on issues that I thought should be raised," recalls Moran. "Shortly after that, I was recommended to be part of Secretary Steven Chu's science advisory team. During the crisis, we worked 24-7 with BP and the incident commander on how to cap the well."

That effort was particularly tense, according to Moran. "It didn't only involve cleaning the spill; it was also: how do we technologically stop this from spilling into the Gulf of Mexico?," she explains. "People wanted to move quickly, but capping could cause worse things to happen. There were a lot of risk reduction measures considered, and the response itself was incredible. I don't think it could've been any better."

It certainly helped that Moran was on hand to provide expertise and guidance. The author of more than 45 publications, she has been advancing our understanding of the physical, chemical, biological and geological aspects of our oceans, and how they impact earth processes such as plate tectonics, as President and CEO of Ocean Networks Canada, a research centre based at University of Victoria in BC. Through that work, and her degrees in marine science and engineering from the University of Pittsburgh, the University of Rhode Island and Dalhousie University, she's



ON OUR COVER

Dr. Kathryn (Kate) Moran, President and Chief Executive Officer, Exec for Ocean Networks Canada, has led an exciting career as a geotechnical engineer. [Christina Marshall photo]

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“WHAT I LOVE ABOUT ENGINEERING IS THE FACT THAT WE CAN TAKE PRACTICAL TOOLS AND APPLY THEM TO IMPORTANT OCEAN SCIENCE PROBLEMS.”

earned a reputation as one of the best ocean engineers in the world. Yet she’s hesitant to take on such a title.

“I work with a wonderful team of 90 people and I consider myself to be part of that team. But what I will say is this: Ocean Networks Canada is the world leader in ocean observing technology, and that’s what keeps us at the forefront.”

For as long as she can remember, Moran has been passionate about the ocean. Growing up in Pennsylvania, she spent many family vacations by the sea, but it took a conversation with her high school physics teacher to turn that interest into a career path.

“He explained the field of ocean engineering to me – and how it used math and science to make things work better. It really fueled my desire to pursue an education in ocean engineering.”

It was a Hudson Cruise out of the Bedford Institute of Oceanography and a job offer from the Atlantic Food Science Centre that brought Moran to Nova Scotia to earn her PhD at Dalhousie. “I moved to the province and fell in love with it. I did my PhD part-time and then took a year off to wrap it up. I had some wonderful instructors. One in particular was Geoff Meyerhoff, who was one of Canada’s most distinguished geotechnical engineers. He was a lovely person and an excellent mentor.”

Now a mentor herself to a new generation of ocean engineers at Ocean Networks Canada, Moran says her profession remains an endless source of inspiration for her. “What I love about engineering is the fact that we can take practical tools and apply them to important ocean science problems. We can conquer the problems and move the ball forward scientifically. That to me is what engineering is all about.”



Dr. Kate Moran is President and CEO of Ocean Networks Canada (OCN), based at UVic in BC. Ocean Networks Canada operates the world-leading NEPTUNE and VENUS cabled ocean observatories for the advancement of science and the benefit of Canada. These observatories collect data on physical, chemical, biological, and geological aspects of the ocean over long time periods, supporting research on complex Earth processes in ways not previously possible.



MetOcean: making a difference by sea and by land



When Tony Chedrawy (BEng'93 Industrial) sees scientific reports on polar ice caps melting, or hears about a dramatic offshore search and rescue, or even about a petroleum company cleaning up an oil spill, he knows MetOcean is making a difference in this world.

"I wouldn't even know where to begin," says the president of the Dartmouth-based company, which produces data collection and telemetry devices, when asked to quantify that. It's understandable, given the company has been in business nearly three decades. What he can say is this: "I look at the environmental reports that are being generated with our products, I look at the lives being saved, and that's how I know what we make is having an impact."

If you want to understand the magnitude of that impact, consider this: virtually all of the world's major coast guards are using the company's

TONY CHEDRAWY IS PRESIDENT OF METOCEAN, IN DARTMOUTH, NS, WHICH PRODUCES AUTONOMOUS BUOYS AND BEACONS FOR USE IN ENVIRONMENTAL MONITORING, OIL SPILLS, SEARCH AND RECOVERY AND NAVAL TRACKING.

self-locating data marker buoys (SLDMBs) to track objects and save lives. Navies have adopted MetOcean's mobile acoustic scoring systems (MASS) to increase gunfire safety training on the seas. And the company has collaborated with many Canadian government departments to create technology for traditional and high-risk industries. That includes a National Research Council-funded partnership with Dalhousie, which resulted in the development of profiling float technology capable of capturing oceanographic conditions at depths of 2000M.

It's an impressive track record, made possible not just by MetOcean's exceptional personnel, but also by Chedrawy's leadership. Originally from Lebanon, Chedrawy came to Dalhousie in 1988, at the encouragement of friends and family here, to pursue an interest in engineering. He opted to focus on industrial engineering because he believed it would maximize his career options.

"The Dalhousie engineering program in general really prepares you to succeed technically, without question, coupled with an improved general sense of business acumen."

After working for several years in oil and gas and IT, Chedrawy found himself in New York longing to return to Nova Scotia. That's when he discovered MetOcean was looking for a VP of Sales & Marketing. He took the position in 2001 and, just five years

later, his contributions to the company's bottom line saw him advance to the role of president. Having spearheaded a management buyout of the company in 2008, he's applying his Dalhousie education and business experience to lead MetOcean into a new era of growth.

"Next year is the company's 30th anniversary. We've got a very energetic, multi-talented team and we have a number of products we're going to be rolling out over the next couple of years, so I'm very excited about our future."

Part of the reason for his excitement is that MetOcean will be leveraging its technologies to go in a new direction, focusing on defence and security. "We're looking at enforcement and harbour surveillance, but also products for land-based applications."

He realizes this might sound odd from a company called MetOcean. "We will continue to provide products for search and rescue, oil spill tracking and scientific applications," he reassures.



"This is about finding more ways to get remote data back to people." And based on previous examples, continue to make a difference.



Engineer at Sea

SCOTT BISHOP IS A MECHANICAL ENGINEERING GRAD AND SOLO SAILING ENTHUSIAST WHO IS CURRENTLY DOING A PHD IN OTTAWA.

When Scott Bishop (MAsc'04 Mechanical) reflects on his engineering degree, he is grateful it taught him how the world works, and how to apply theory to real-world problems. "I draw on this education every day – at work, play, or preparing for an adventure."

Growing up in Nova Scotia, the avid sailor had a fascination with the ocean, particularly its majestic power. "I became interested in sailing when I was eight years old," he says. "I had a paper route at a family cottage on the Northumberland Strait. After a second summer of delivering papers, I had saved enough money to buy a six-foot wooden sailboat. It cost \$300; I paid half and my father paid half. I sailed that boat every day with the hope of travelling to PEI, but I never got up the nerve to cross the Strait."

That passion for the ocean and sailing stayed with Bishop. In March 2009, he purchased Rosebud, a 38-foot sailboat extensively damaged during Tropical Storm Kyle in 2008. Although it was an insurance write-off, Bishop saw an opportunity to fix her and cross the Atlantic Ocean.

"Everything had to be stripped out and replaced or rebuilt - the electrical, plumbing, pumps, electronics, engine, and rudder – and it had a hole that had to be patched." That, he says, is when his engineering studies really came in

handy. "I could directly apply what I was learning: electric circuits, strength of materials, combustion engines, machine design, and electronics. Engineering helped me get it right."

It also gave him the discipline to prepare for the trek. Over the next four years, he made small trips, many ship modifications and brushed up on the finer points of sailing. Finally, on July 5, 2013, a nervous and excited Bishop tossed off the dock lines and headed off, single-handed, on the adventure of a lifetime.

"It was incredible; I sailed from Halifax to the Azores in 17 days. That journey for me was all about exploring, dreaming, and discovering new things."

This past summer, Bishop set out on an even more impressive voyage – the Madeira Islands to Halifax. It was a much more challenging crossing because, as he explains "I had days of no wind, squalls of 40-50 knots, a gale that ripped my main sail, I narrowly avoided Hurricane Arthur, lightning storms, including a near or possible strike, 4m to 6m-steep waves crossing the gulf stream, and 39 days of isolation. It was tough. I was pushed to my limit and then some."

Knowing the boat was well equipped and that no detail had been spared in preparing for this journey gave him comfort along the way, as did emails



from friends. "Having someone reach out and encourage you is a wonderful feeling."

Luckily for Bishop, there's never been a lack of encouragement. That was certainly the case at Dalhousie where his engineering professors supported him throughout his studies. This inspired another life goal for Bishop: to become a university professor and be an inspiration to a new generation of engineering students. "I believe encouragement and mentoring is a key to achieving your goals and dreams – and it's time for me to start giving back."

If anything, he hopes to nurture a sense of adventure in his students, because the experiences you gain when you set out to explore your world are the ones you will never forget. "When I'm sailing and I get to see whales, dolphins, sunsets, stars, or a full moon – these sights create some of the most inspiring moments in my life."

Wind in his Sails



WILL APOLD IS A PASSIONATE SAILOR AND 2011 WINNER OF THE MARBLEHEAD TO HALIFAX RACE. HE IS ALSO INVOLVED IN WIND ENERGY DEVELOPMENT THROUGH HIS COMPANY, NATURAL FORCES TECHNOLOGY.

Will Apold, (BEng'70, MEng'79) has always been one to go whichever way the wind blows. He spent much of his early years traveling the world with his father, a Norwegian sea captain. He bought his first boat nearly 40 years ago and has been sailing ever since, setting a record or two along the way. He's also made investments in wind farms in recent years through his company, Natural Forces Technology.

And yet, when you talk to him about his passions, it's pretty clear he's an engineer through and through. Just ask him about *Valkyrie*, the 78-foot yacht he had custom built by William Tripp in 2007.

"It's quite a technical boat," he admits. "It's got a lot of adjustments you can make when you're sailing it. I guess it's just part of my engineering background that I like to have systems that are more complicated than simple."

Complicated is hardly a word you'd associate with a man who says the sea is in his blood. He didn't just inherit it from his father; his mother—also a Dalhousie alumnus—came from a Lunenburg fishing family. He's spent much of his life

sailing the ocean, living next to it, even making a living from it, albeit it as an engineering consultant to the fish processing industry.

Some people may fondly remember their first car, but Apold lights up when talking about his first boat, a 26-foot Bluenose-class wooden sloop purchased in 1975. Intended for cruising, it wasn't long before he began racing it. The first time out, he came in at the back of the pack, but he had no regrets. "It's all part of the learning experience," he says. "It's the joy that drives me on. I just like being on the water."

Apold has learned a lot since then. With *Valkyrie*, his fifth boat, he's won four prestigious races, including the Marblehead in 2011, which he completed in a record time of 31 hours, 50 minutes and 18 seconds, making him the first Canadian to take top honours.

"We had the boat doing 23.9 knots coming into Halifax Harbour. It was dark. No moon. All you could see was the city lights. And with that speed, there was a little bit of danger, so that makes it all the more exciting."

Making waves in oceans instrumentation recovery

XEOS TECHNOLOGIES DEVELOPS INNOVATIVE SATELLITE TRACKING BEACONS

Derek Inglis (DEng'87, BEng'90 Industrial) was one of those kids who always took electronic devices apart. Putting them back together, however, proved tricky.

"I probably blew up most of the things I played around with," he concedes. "In high school, I used to do lighting and sound for theatre and concerts. I could never afford proper gear, so I sort of made my own. A lot of it ended up in the garbage."

Inglis has come a long way since then. These days, the Industrial Engineering grad is helping to prevent expensive ocean science instrumentation from becoming ocean junk as president of Xeos Technologies. The company develops wireless telemetry products for environmental monitoring applications

and public safety markets, and it has found considerable success in the oceans instrumentation recovery sector with its innovative line of satellite beacons.

"Our mantra is small, low power and rugged to the extreme," Inglis says with demonstrable pride. "We can take satellite transmitters and GPS receivers, put them in small packages and have them run so they can last up to two years on off-the-shelf batteries. We have equipment that goes as deep as 11K underwater and most of our beacons are made of titanium so they hold up in deep waters."

Inglis is quick to credit the collective knowledge of his team and the education he received at Dalhousie for the company's success to date. Originally interested in business, he says

he was encouraged to pursue engineering by a high school physics teacher, and that led him to Dal. "It was, and remains, the premier school for engineering in Atlantic Canada. The professors really encouraged critical thinking – questioning the face value and digging deeper to look at the facts and the numbers underneath. That's something we encourage every day at Xeos."

Choosing a discipline, however, was something of a struggle. Inglis eventually opted for Industrial Engineering because it had a business focus. "We did case work, we looked at the economics of engineering and the return on investment," says Inglis, who also possesses an MBA. "It was a way to marry my two interests."

More than a successful sea captain, Apold has also been a captain of industry, first with his food processing consulting firm, Tavel, and more recently with Natural Forces Technology. "Wind energy is a very interesting and dynamic area to be in. It moves slowly, but it moves in big pieces, and it is very technical, so it has that engineering aspect to it."

Apold credits his Dalhousie experience in part for his success on land and sea. "Professors like Ken Margerson, the head of the engineering department, took a very practical approach to teaching. He ensured that we could relate to the problems we were required to know, and I still draw on that example in everything I do."

Although semi-retired, there's still considerable wind in Apold's sails. He's investing in more wind farms and preparing for more transatlantic races, not necessarily to win but for the experience.

"When you're out there at night and you see Orion above and think that, 400 years ago, people were travelling the same routes and seeing the same stars as you, nothing in the world quite compares to that feeling."

A third interest, the oceans sector, was nurtured gradually, first at Vemco, where he worked on fish telemetry products during summer study breaks, and then at Seimac, which specialized in environmental monitoring systems. A change in ownership led to a change in direction at the company, and Inglis partnered with two other Seimac engineers to start Xeos in 2004. Since then, Xeos has grown by leaps and bounds. Its products are sold in 37 countries, including China, it supplies tracking beacons to the United States Navy and it is making scientific research of the deepest parts of the ocean, such as the Mariannas Trench, possible.

Inglis sees continued growth and profitability ahead for Xeos, but what



Top: *Valkyrie*, pictured at the 2010 Maxi Worlds in Sardinia.



Left: *Valkyrie*, pictured at the 2008 Swan Rolex Worlds in Sardinia.

he'd really love to see is more young people take up engineering. "Engineering and technological innovation have really fueled our economy and our understanding of our world, particularly our ocean environment. Look at someone like Elon Musk. He's an engineer and he gets things done. The world needs more Elon Musks."

DEREK INGLIS IS PRESIDENT OF XEOS TECHNOLOGIES IN DARTMOUTH, NS, WHICH DEVELOPS AND PRODUCES WIRELESS TELEMETRY AND DATA COLLECTION PRODUCTS FOR USE IN OCEAN ENVIRONMENTS.





Ensuring our coasts and oceans are clear of risk

Ronald Pelot can't think of a better place to explore the risks and safety of Canada's marine environments than Dalhousie University.

"It's literally by the ocean, which is inspiring," says Pelot. "You also have access to ocean-trained experts here, and in Halifax. If you're studying the impact of noise on marine environments, there are people who know about ships, people who know noise and people who know marine mammals and noise."

That's vital expertise to have when you're developing the type of methodologies, software and tools that Pelot and his team are developing through the Maritime Activity and Risk Investigation Network (MARIN). The Dalhousie-based research group's tools are enhancing decision-making in search and rescue planning, addressing oil spills and coastal zone planning for safer oceans activity, but also to protect marine life and environments.

"We've been doing a lot of work with Canada's Coast Guard, Defence Research and Development Canada and with Transport Canada," says Pelot. "We're looking at everything from

improving Coast Guard responses to incidents to weather impact on fishing vessel safety."

Although Pelot has been researching marine risk and safety for nearly 20 years, it came about partly by happenstance. Originally from Ottawa, he was studying resource energy modeling at the University of Waterloo when he got involved in the Institute for Risk Research on campus. That sparked an interest in environmental risk, which continued when he joined Dalhousie University in 1994 as an Industrial Engineering professor. And that made him the ideal candidate when a Canadian Coast Guard representative approached the Faculty to conduct a risk analysis of its cross-country capabilities.

"I was the only person doing risk analysis here, so I started doing marine risk research. There was very little work being done in the area at the time, but it's grown exponentially since."

Somewhat of a pioneer in the field, the appeal of the work for Pelot was the opportunity to do applied projects. "Saving lives, which the Coast Guard does, is about as close as you can get

FOCUS ON RESEARCH

RONALD PELOT IS A PROFESSOR OF INDUSTRIAL ENGINEERING AND ASSOCIATE SCIENTIFIC DIRECTOR OF THE MARINE ENVIRONMENTAL OBSERVATION PREDICTION AND RESPONSE NETWORK (MEOPAR).

to where the rubber hits the road. That kind of grounded research drives me because it's helping people."

Over the years, Pelot and his team's research has led to improvements in air searches for mystery oil spills and enhanced Coast Guard response times through recommendations on station and vessel locations. Currently, he's researching how the Coast Guard can minimize the impacts of its upcoming fleet refit and collaborating on a surveillance project for the Northwest Passage leading through the Canadian Arctic Archipelago.

"Because ice is melting in the area, there'll be more shipping, oil and gas exploration and cruise tourism, for example. We're doing spatial traffic projections and risk analyses to see if there are sufficient tracking, risk management and communications to handle all that activity."

The work also dovetails with Pelot's role as Associate Scientific Director with the Marine Environmental Observation Prediction and Response Network (MEOPAR). This nationwide team of researchers is dedicated to refining Canada's ability to manage marine risks. He's been studying oil spills with MEOPAR, extreme weather events and fishing fleet safety, and he will be investigating the impact of shipping noise on marine life. Happy to contribute to the safety of Canada's marine environments, Pelot hopes his work will lead to more collaboration between researchers and policymakers.

"This is really about dealing with future uncertainty when making decisions about maritime safety and protection. I'd like to think the research taking place now, including mine, will help demonstrate good ways to do that."

Where sand meets surf

Introducing the IDEA sandbox

Andreas Hart is comfortable in an engineering lab, but it's on the waves where he feels most at home – he has been surfing since age 13.

During his time at Dal, he could often be found at the beach when he needed a break from his Mechanical Engineering studies. Last year he found a way to link those two parts of his life together.

"I've always wanted to make surfboards and then, through Dalhousie Engineering, I was able to make this with some of my classmates," he says, pointing at the CNC surfboard router now assembled in a lab on Sexton Campus. "So my friends and I decided to start a lifestyle company ... that includes surf lessons, a web presence and surfboard design." It's the "design" part of their emerging business, the Hart Surf Company, that the CNC surfboard router is built for. The device links Hart's surfing expertise together with his education in fluid dynamics and the power of computer-aided design (CAD). The result allows him to more efficiently mould and sculpt test surfboards out of Styrofoam. "We're at prototype phase, mostly CAD models at the moment," explains Hart, who graduated with his BEng in May. "I'm eager, now that we have this all set up, to have this space where we can cut some of [the board prototypes], try them out."

A SANDBOX APPROACH

Hart's work has been one of the early projects supported by Dal's new IDEA Sandbox, officially announced in November by Nova Scotia Premier Stephen McNeil. The Government of Nova Scotia is investing \$250,000 in the IDEA Sandbox — "IDEA" standing for "Innovative Design and Entrepreneurship Academy" — a collaboration between Dal's Faculty of Engineering, its Rowe School of Business and NSCAD University. The IDEA Sandbox will be a space where

students and entrepreneurs can come together to develop start-up companies, explore innovative ideas and tap into mentorship and expertise from across various disciplines.

"Our universities are a key piece in growing our economy, and through collaboration we have the capacity to produce the next generation of innovators and successful entrepreneurs," said Premier McNeil.

space with state-of-the-art engineering software and 3-D printing.

CREATIVITY, INNOVATION, ENTREPRENEURSHIP

Dal President Richard Florizone, also speaking at the event, noted Dal's commitment to contributing to cultural and economic vitality both locally and globally. He explained how sandboxes such as the IDEA Sandbox are a key



Recent graduate Andreas Hart (second from left) shows off his CNC surfboard router to Nova Scotia Premier Stephen McNeil, Minister of Advanced Education Kelly Regan and Dal President Richard Florizone. (Danny Abriel photo)

Clifton Johnston, Dal's NSERC Chair in Design Engineering, who will play a leadership role in the new sandbox, described how the IDEA Sandbox will provide programming and space for students, faculty and businesses to work together to create start-up companies focused on tangible products. In addition to allowing students to connect with expertise, ranging from design and marketing to finance and engineering, the sandbox will offer design and prototyping

part of Dal's efforts to foster creativity, innovation and entrepreneurship among both students and the community. "No one sector owns 'innovation,'" he said, describing an innovation ecosystem that combines university expertise with small- and medium-sized enterprise, government partners and other collaborators. "To really capitalize on the R&D at Dalhousie, and at universities across the province, it requires all of us, working together, to collaborate, to partner and to support one another."

NSPDCC: A tag-team effort to support local entrepreneurs

In August, the Honourable Michel Samson, Nova Scotia Minister of Economic and Rural Development and Tourism, came to Dal's Sexton Campus to mark the official opening of the Faculty of Engineering's new centre: The Nova Scotia Product Design and Development Centre (NSPDCC).

The formulation of the NSPDCC is a result of merging two existing groups known as the Innovation in Design Lab (iDLab) and the Product Research and Design Group (PRDG). The groups serve a similar archetype but with slightly different skill sets and resources.

The Faculty of Engineering, with \$85,000 in support from the province, has combined the two groups to maximize the efforts of each while continuing to support research and development in Nova Scotia and an innovation based economy.

"Finding ways to connect the private sector with the expertise and creativity of our universities will help make our businesses more competitive and profitable," said Michel Samson, minister of Economic and Rural Development and Tourism. "This centre can help our young, ambitious engineers gain valuable connections to local businesses and our small businesses reach their highest potential."

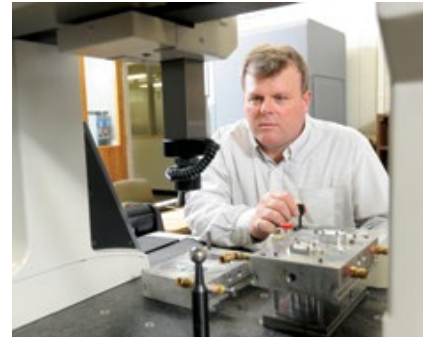
The NSPDCC will provide entrepreneurs with innovative new technologies and will support local business. This partnership will bring expertise, experience and resources to small and medium sized Nova Scotia businesses, and will serve the product research, development and prototyping needs of Nova Scotia entrepreneurs.

Two such entrepreneurs were on-hand at the event. Colin Deacon, chief executive officer of BlueLight Analytics talked about the engineering design team's work on checkMARC, a resin curing tool for dental practitioners invented by Dal Dentistry Professor Dr. Richard Price. As well, Steve Benison of Rubber Trails and Surfaces Canada Ltd in Upper Musquodoboit spoke about several

"FINDING WAYS TO CONNECT THE PRIVATE SECTOR WITH THE EXPERTISE AND CREATIVITY OF OUR UNIVERSITIES WILL HELP MAKE OUR BUSINESSES MORE COMPETITIVE AND PROFITABLE."

projects he's worked on with Dal engineers, including a curb for running tracks that's been accepted by the International Association of Athletics Federation for use in the Olympics.

"Manufacturing businesses in the Maritimes need to innovate to be far more efficient than our competitors who are closer to the larger, more affluent markets," said Steve Benison, Rubber Trails and Surfaces Canada Ltd.



Rob Warner (MAsc, P.Eng) A principal investigator with the NSPDCC demonstrates working with the CMM (coordinate measuring machine).



Rob Warner (MAsc, P.Eng) and Emerson Hawkins, EIT (Engineer in Training) pictured in front of the CNC (Computer Numerical Control) milling machine.



Emerson Hawkins, EIT speaks with Minister Samson.



When school's out, SuperNOVA's in

INNOVATIVE AND SUCCESSFUL SCIENCE OUTREACH SUMMER PROGRAM FOUNDED BY DAL GRAD NEARLY 20 YEARS AGO

Jon McConnell (BEng'97, Mining) marvels that it has been nearly 20 years since he founded SuperNOVA.

"It's surprising to see how successful the program has been, and how much it has grown."

Designed to teach kids about STEM subjects, SuperNOVA offers workshops, an annual summer camp program and outreach camps that target youth from communities traditionally underrepresented in these fields. The outreach camps are supported by Actua, a national registered charity that connects 35 similar programs across Canada.

The inspiration for the program came in part from the welcoming environment McConnell encountered at Dalhousie and TUNS. "It was hugely diverse, with people from all over the world, and of various backgrounds. This was all great exposure for a kid from Yarmouth and it led me to get involved on campus."

He became the Engineering rep on the Dalhousie Student Union, and the Mining rep, Vice President, and then President of the Engineering Undergraduate Society at TUNS. He also participated in the Youth

Engineering and Science Camps (YES Camps) conference of 1995 as a delegate of TUNS. At the time, YES Camps existed in several major centres across Canada, but not in Nova Scotia, and that inspired McConnell to start SuperNOVA.

Securing support and funding from the Dean of Science at Dalhousie, faculty and staff at TUNS – including then-chancellor Dr. Ruth Goldbloom – and the Nova Scotia Minister of Education, McConnell hired four instructors and began a series of workshops at Halifax-area schools in January 1996. By July, they had initiated the summer camp program, welcoming enthusiastic, budding engineers to Sexton campus. "SuperNOVA really took off from there," observes McConnell. "I think the combination of the national and local support really helped in its growth."

An emphasis on fun and the fact that the program is student-led have also contributed to SuperNOVA's longevity. "Instructors at the camps are in the midst of their studies and often in the best position to connect with school-aged children and share their passion. They've also done an excellent job of meeting the

needs of some less represented groups in the province. I do a biannual check-in and they've always got new and creative outreach taking place."

Currently, McConnell is the Budget and Planning Manager at Pengrowth Energy in Calgary. He may not be focused on engineering in his day to day duties, but his Dalhousie and TUNS experience still comes into play. "I've always found leading students to be rewarding, and I still embrace and draw on my student leadership skills in guiding our team at Pengrowth."

Asked if he has any advice to offer from his efforts to launch SuperNOVA, McConnell laughs. "When I think about it, Dr. Adam Bell, Dean of Engineering and Dr. Warwick Kimmins, the Dean of Science must've supported me on my enthusiasm alone, because my business plan wasn't the most solid piece of work. I think it's a testament of how far conviction and enthusiasm can go. Never give up on an idea that has the potential to make a difference in the lives of others. It could have incredible outcomes."

Where in the world is Dalhousie En



FIRST PLACE

LONDON EYE ON AN OMINOUS NIGHT

London, England, November 2013

CHRIS HOBBS (BEng'01, Mechanical), Sherwood Park, AB

I see the London Eye as an engineering accomplishment, and it is a popular destination for people. I have family ties in London and this particular photo evokes happy memories.

In our spring issue we asked our readers for the second year in a row: *Where in the World is Dalhousie Engineering?* Alumni and current students submitted captivating images taken during their careers, work assignments and world travels. These photos illustrated both engineering challenges and diverse locations around the globe where our engineers find themselves living, working and making a difference. Thank you to everyone who entered and congratulations to the winners!

Thank you to our panel of judges for their participation: Nick Pearce (professional photographer, Dalhousie University); Elizabeth Croteau (BEng'13 and MASc Candidate 2015, Industrial); Dr. Ronald Gilkie (BEng'62, MEng'64, retired professor and Dalhousie Alumni Award winner for Lifetime Achievement)

Look for our next photo contest soon.

gineering?



SECOND PLACE

BAOBAB

Morondava, Madagascar, rain season
2012

GEORGE WHITE (BEng'78, Mechanical), Toronto, ON

This photo was taken in the jungle near Morondava. The trees are magnificent. I spent five years in Madagascar during the construction of a nickel/cobalt production facility.



THIRD PLACE

REACTOR

Kiev Oblast, Ukraine, July 2014

MIKE MACMILLAN (BEng'12, Chemical), Stillwater Lake, NS

View from inside the unfinished cooling tower of reactor number 5 at the Chernobyl Nuclear Power Plant. Construction of the tower was halted following the accident in April 1986 and remains abandoned. Despite the scare and severity of the accident, the exclusion zone is largely a peaceful place where nature has begun to reclaim what was once a large industrial site. I chose this photo for the contrast between the accident legacy represented by the derelict tower and nature's bright blue sky above.

HONORABLE MENTIONS

Ed Kinley, (DEng'83, (Industrial) (TUNS)'86), Hanwell, NB; Stacia Baldwin, (BEng'11, Environmental), Baddeck, NS;
Christine Bonnell-Eisnor (BEng'99, Chemical), Beechville, NS

You can see their photos on our alumni page at dal.ca/engineering

Lifetime Achievement Award

DR. RONALD GILKIE (BSC'60, BENG'62, MENG'64)



"DR. GILKIE HELPED MAKE THE ENGINEERING PROGRAM A FAIR, PROGRESSIVE ENVIRONMENT FOR FEMALE STUDENTS. THAT SUPPORT STRENGTHENED MY RESOLVE AND CONFIDENCE AND SET ME ON A STEADY PATH TO GRADUATION AND BEYOND."

The Lifetime Achievement Award recognizes alumni for exceptional accomplishments in career and community service. The gauges for this prestigious alumni award are an excellent example of how Ron Gilkie has lived his life, making him a worthy recipient.

Growing up in Melville Cove, Nova Scotia, Dr. Ronald Gilkie says his family always had an expectation of him to go above and beyond, no matter what he did. "My Dad said if someone gave you a job, you shouldn't just do it; you should do it well." That attitude sort of gets ingrained in you."

Encouraged by a professor to pursue teaching, Dr. Gilkie started out as an assistant professor in 1967, and quickly proved himself to be a professor who cared about his students. Genanne Beck, (BEng'74, Civil), who was Dr. Gilkie's first female student, recalls the impact he had on her education.

"I was the only woman in the class," says Beck, who nominated Dr. Gilkie for the award. "In fact, there were only two women in the entire engineering school that year. Women made up just 0.5 per cent of the entire engineering profession

in Canada. So, for female students, there was a risk of becoming somewhat of a novelty."

That, she says, was never the case with Dr. Gilkie. "I was an integral part of the class. He helped make the engineering program a fair, progressive environment for female students. That support strengthened my resolve and confidence and set me on a steady path to graduation and beyond. Still to this day, all these years later, Dr. Gilkie and I still talk about it."

Dr. Gilkie, determined to go above and beyond, is exemplified by the more than 70 university committees he has volunteered with during his 40-year teaching career, and his instrumental role in the merger of TUNS and Dalhousie University.

Even in his retirement, Dr. Gilkie is a member of 11 different boards and committees. Elected a Fellow of the Canadian Academy of Engineering in 2012, he remains the Chief Warden of Iron Ring Camp 7 and plays electric bass in three bands.

Yet Dr. Gilkie's most powerful legacy might be his commitment to giving back to the school of Engineering. In 1962, he

made a \$1 donation to the to the Tech Continuing Fund, and proceeded to increase that by \$1 for each year since he graduated. He also encouraged his students to do the same. Says Beck: "Dr. Gilkie explained that he had personally adopted that pattern of giving, increasing his donation by \$1 each year. As a result, I followed his lead and continue to support the university today."

Asked how he feels about receiving the award, Dr. Gilkie says, "It was truly an honour being nominated for the award, by Genanne. To have the selection committee choose me as the recipient is the icing on the cake. This has definitely been a treasured highlight in my life."

New Engineering Faculty

“ENGINEERING IS AN EVOLVING DISCIPLINE AND ENGINEERS STRIVE TO IMPROVE, AND CREATE BETTER AND MORE EFFICIENT SOLUTIONS TO PROBLEMS. AS OUR ENGINEERING CURRICULUM AND RESEARCH ACTIVITIES CONTINUE TO EXPAND IN BREADTH AND DEPTH, OUR FACULTY MEMBERS CONTINUE TO DO A GREAT JOB OF ENCOURAGING STUDENTS TO THINK CRITICALLY. I AM PLEASED TO WELCOME FOUR NEW TALENTED FACULTY MEMBERS TO THE FACULTY OF ENGINEERING TO CONTRIBUTE TO THAT MISSION.” – JOSHUA LEON, DEAN

TED BRANSCOMBE

Ted is a PhD Candidate, at Queen’s University, and completed both his bachelor and masters of Science at Queen’s University. His research areas are in mobile equipment, reliability and maintenance, control systems and sensor applications in mining, and mine operations.

Ted has been teaching Senior Design 1 and Intro to Mining Engineering. His teachings focus on new technological solutions for mining processes that could be improved or better understood with additional information from new and existing sources.

Ted is pleased to be a part of Dalhousie Faculty of Engineering, and hopes to teach his students that through enhanced data gathering and data analysis, their work to develop proof of concept solutions, can lead to improved outcomes in real world mining environments.

ANDREW CORKUM

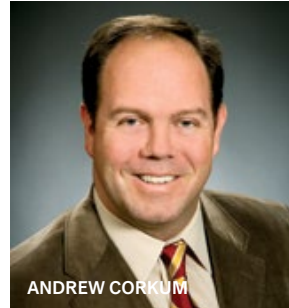
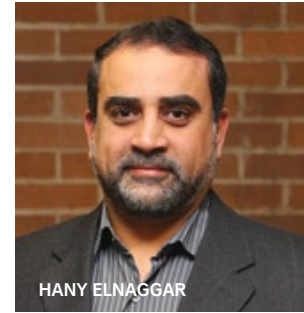
Andrew grew up in Halifax and completed his engineering degree at TUNS. He then worked as a geotechnical engineering consultant in Alberta’s oil & gas sector. After about 5 years of doing fieldwork he completed a masters degree and PhD at the University of Alberta.

Andrew went to work in Minneapolis for Itasca Consulting Group, Inc, where he worked on tunneling and mining projects all over the world. Including: the New York City subway expansion, diamond mines in South Africa and deep tunneling for a large hydroelectric project in China. In 2010, he joined BGC Engineering Inc. in Halifax and contributed to company projects nationally and internationally.

After 17 years in consulting engineering, Andrew is excited about his new role with Dalhousie Engineering, and for the opportunity to further his research ideas. He enjoys teaching, and is eager to contribute to the growth and evolution of Dalhousie’s Mineral Resource program.

HANY ELNAGGAR

Hany Elnaggar joined Dalhousie Engineering this past summer, before that he was an associate professor at the University of New Brunswick. Dr. El Naggar is a Geotechnical Engineer with more than 18 years of experience in civil construction, geotechnical and structural engineering and research in Canada and overseas. He is experienced in the analysis and design of foundations and soil-structure interaction of buried infrastructures.



Dr. El Naggar earned his MSc and his PhD in the field of buried infrastructures from the University of Western Ontario.

His research involves developing innovative foundation systems as well as the behaviour of buried infrastructures: with emphasis on seismic considerations and the effects of degradation. He has several publications in refereed journals and conferences. Dr. El Naggar’s teaching responsibilities include various geotechnical engineering topics including: Foundation Design, Geotechnical Earthquake Engineering, Numerical Modeling in Geotechnical Engineering and Buried Infrastructures Design.

Dr. El Naggar is the current chair of the New Brunswick chapter of the Canadian Geotechnical Society. He also chairs the Buried Structures Committee of the Canadian Society of Civil Engineers (CSCE), and is a member of several professional associations.

SCOTT FLEMMING

Scott Flemming was born in Halifax and grew up on the East Coast. He has a BSc in Mathematics from University of Prince Edward Island, a BEng in Industrial Engineering from Dalhousie and has most recently finished an MAsc in Mechanical and Industrial Engineering from the University of Toronto.

Scott began teaching in the Industrial Engineering Department in January 2013 and has been an instructor since September 2013. He teaches a wide variety of courses: Operations Research, Algorithms, Production Systems, Fundamentals of Industrial Engineering, and Engineering Economics. Currently Scott is looking for research opportunities in the area of Human Factors Engineering and Sustainability. He is interested in methods of designing decision-aid technology that will encourage energy/ resource conservation.



Easy Rider

“Keep your eyes on what you’re trying to achieve. Realistic goals will help you get through anything. Stay focused on the steps to achieving your goal.”

That sound advice comes from Andrew L'Esperance, a semi-professional mountain bike athlete currently in his fourth year of Mechanical Engineering studies at Dalhousie. It's advice born of experience; he's been following his passions for several years now and each seems to feed his resolve to master the other.

ANDREW L'ESPERANCE

IS A FOURTH-YEAR MECHANICAL ENGINEERING STUDENT AND A SEMI-PROFESSIONAL MOUNTAIN BIKE RACER WHO HAS REPRESENTED CANADA AT WORLD CHAMPIONSHIPS.

L'Esperance was only 12 years old when his interest in cycling took hold. “My mom took me to Zermatt, Switzerland, rented a bike for me and let me loose on the mountains around the town for a week. That was it for me. I was hooked.”

It wasn't long before L'Esperance was racing, working his way up with each competition. “Like everything in life, cycling is a process. I started out at the local level, and then went national, and I eventually advanced to world cup competitions. For the past four years I've been sponsored by and racing for the Norco Factory Team.”

His dedication to this fiercely competitive sport demonstrates considerable discipline, and he's applied that same sense of discipline to his engineering studies. “The training and goal setting involved in both is very similar. For example, going into an engineering exam, you must be prepared and confident in your ability in order to succeed. The same is true on race day. The two really go hand in hand.”

Speaking of race days, L'Esperance has placed fourth in the National mountain bike series and represented Canada at World Championships. Whether good or bad, each race, he says, is an opportunity to learn and move forward. “I take the time to evaluate each one. I go over the sections I did well in and the ones that could've gone better. And I apply that to my next race.”

As for future goals, L'Esperance is looking is to compete in the 2020 Olympics in Tokyo. And he seems well on his way to achieving that dream. By living a very disciplined life, he has all the qualities you associate with a successful professional athlete. He's calm, collected and focused, he's an energy conserver, and he has a positive outlook on life. It's safe to say that we'll be hearing more about L'Esperance on his journey to Olympic glory.

In the meantime, there is a degree to earn, and once that goal has been achieved, he's hoping to combine his passions by working with a mountain bike manufacturer. “I've already had a taste of what that might be like by providing my sponsor, Norco, with feedback on their products. It's really cool to be able to do that – I think that my knowledge in cycling, combined with my education is going to be invaluable to my career.”



Dal Formula SAE returns to Silverstone

For the second year in a row, the Dal Formula SAE team participated in the Silverstone Circuit, UK. The team competed in Formula Student, a series of events that ran over 4 days in July. Once again, the team was the only North American team represented at the race – and they performed exponentially better this year. Rather than doing a complete redesign of the car, the team focused on refining the components they knew worked well, and the results really showed. The team came in 20th overall out of the 97 teams that participated.



ELIZABETH CROTEAU IS A MASC STUDENT WORKING WITH THE CANADIAN FEDERATION OF ENGINEERING STUDENTS TO PROMOTE INCLUSIVITY AS A NATURAL PART OF THE ENGINEERING STUDENT EXPERIENCE.

Taking a lead

In her role as National Councilor with the Canadian Federation of Engineering Students (CFES), Elizabeth Croteau (BEng '13 and MASc Candidate 2015, Industrial), is Co-Chair of a very special project. Croteau is Co-Chair of the Inclusive CFES Environments (ICE) Task Force, put together in March 2014 to address growing concerns regarding the inclusiveness of student spaces and events.

The mandate of ICE Task Force is to take on a leadership role in promoting inclusivity as a natural part of the student experience. Croteau met with engineering students across the country to frame discussions around how to create environments that are inherently inclusive. The results from Croteau's consultations with students were compiled in the Inclusive CFES Environments Task Force Report, and the findings were not only shared with the membership of the CFES, but to Engineers Canada and the National Council of Deans.

The report includes recommendations

to find new ways to continue to honor traditions and promote camaraderie, without isolating or excluding students. These include a new official code of conduct, an incident reporting system, inclusivity training for student leaders, and promoting more inclusive events like bowling, and scavenger hunts. The report also gives consideration to other barriers such as finances, accessibility, and religious restrictions when planning events for students, ensuring that every student can participate.

CFES runs three main student activities: The Canadian Engineering Competition, Congress, and the National Conference on Women in Engineering (soon to be rebranded as the Conference on Diversity in Engineering). Soon, all of these conferences and events will benefit from the inclusivity measures recommended by the ICE Task Force. "It's not about being strict or boring," Croteau comments. "It's about having a good time, and showing that you don't have to be exclusive to be exceptional."

Dal-French team to compete in transatlantic race

A team of Dal electrical engineering students is collaborating with a French engineering school, Ensta Bretagne in Brest, France, to outfit an autonomous sailing vessel to compete in the Microtransat Challenge.

The Microtransat Challenge, a transatlantic race for autonomous sailboats, was created by Dr. Mark Neal of Aberystwyth University in Wales, UK and Dr. Yves Briere of the Institut Supérieure de l'Aéronautique et de l'Espace in Toulouse, France. However, since its conception in 2010, no team has yet been able to successfully complete the Challenge.

The Challenge runs for the duration of the year, and teams may depart at any time. The Ensta/Dal sailboat was designed and built in Brest. It is 1.7 metres in length. It will be shipped



The Microtransat Challenge aims to stimulate the development of autonomous sailing boats through friendly competition. A team of Dal students will be working on the navigation and control systems for a 1.7 metre vessel.

to Halifax in early winter so that our Dalhousie students can install and test the navigation and control systems.

Electrical engineering professors J.F. Bousquet, and Kamal El-Sankary are currently putting together the Dal Engineering team of students, with a clear a goal of becoming the first team to complete the transatlantic race.

Co-op Student of the Year

Matthew Dugie, BEng Civil 2014 was named Engineering Co-op Student of the Year. Matthew was nominated by his co-op employer BGC Engineering



Inc. During his final work term at BGC, Matthew's supervisor praised his outstanding organization and planning, learning ability, decision making skills and productivity, calling him "an asset to group harmony" and noting that he could "depend on him in any situation." Including this award, Matthew has accumulated over \$40,000 in awards and scholarships during his studies. Upon graduating, Matthew accepted a full-time job with BGC in Vancouver.

Co-op Awards: Celebrating Excellence in Experiential Learning

At a reception this summer, some of the many valued employers who provide work term opportunities to co-op students through Dalhousie's Science, Information Technology, and Engineering Co-operative Education Program were honoured as **2014 Top 6 Co-op Employers on the Planet**. The winners include:

Vanessa Margueratt, Environmental Assessment Officer, Nova Scotia Environment Nominated by Environmental Engineering student Alex Hayes, who recently graduated with his masters in biological engineering.

Paul Arsenault, Mechanical Engineer, Ultra Electronics Maritime Systems Nominated by Mechanical Engineering student Andrea Felling, who since graduated and now works for Ultra Electronics.

Patrick Chan, Manager of Reliability Engineering, Mobile Equipment Reliability, Suncor Energy Inc. Nominated by Mechanical Engineering student Cody Hollohan, who has since graduated and works for Suncor full-time.

Jason Pagnutti, PCL Constructors Inc. Nominated by Materials Engineering student Andrew Burford, who has since graduated and secured full-time employment with PCL.



Co-op Employer Team Manager Doug Gallant (left) presents a Top 6 Co-op Employer on the Planet Award to Paul Arsenault (centre) of Ultra Electronics Maritime Systems. Paul was nominated by his co-op student Andrea Felling (right).

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“SUCCESS TO ME IS KNOWING THAT, LONG AFTER I’M GONE, PROJECTS WILL CONTINUE ... AND THAT THE STRIDES WE’VE MADE TO IMPROVE ECONOMIC PROSPERITY IN THE PROVINCE WILL GROW STRONGER.”

Remembering John Chisholm

When John Chisholm set out to build the high wall mining system that he would name Novaminer, the Antigonish businessman travelled to Kentucky on a reconnaissance mission.

“He took a team from our company - our electrician, our shop foreman and me,” recalls Paul White, vice president of engineering at Nova Construction. “We were in the boardroom and an executive for this operation was running down the millions of dollars and the engineering people who’d built their system. He asked John ‘What kind of engineering staff do you have to dedicate to this project?’ and John, without missing a beat, said ‘You’re looking at it.’”

For Chisholm, who passed away last July, there was no such word as ‘can’t.’ When he had an idea, he found a way to make it happen. It was that tenacity - that enthusiasm - that helped make Nova Construction, the company he cofounded with his father in 1963, such a great success. And the projects he took

on - from the development of the Porcupine Quarry to the construction of the Cobequid Pass. - resulted in economic spinoffs and employment opportunities for Antigonish.

“I don’t know if there is a contractor I’ve ever met in Eastern Canada that was as smart as or had the ability that John had when it came to doing construction work,” says Joe Shannon, owner and president of Atlantic Corporation Ltd. “He could look at a job or a tender and he would have it cased right down to the last stone. I don’t know what it was about him, but he could find a gravel pit anywhere in the world where no one would find one.”

He also had a natural knack for engineering, a trait Dalhousie University recognized when it granted Chisholm an honorary degree in 2013. “He could certainly do anything that any engineer I knew could do,” observes White. “The schedule, the timing, the people, the equipment - he made pulling

it all together look so simple. He had so much confidence in himself and his people that he could take anything on without any difficulty.”

But what particularly impressed Shannon about Chisholm was his dedication to giving back to the community and the province. He not only made generous donations to the Coady Institute at Saint Francis Xavier University and the IWK, he supported a local hockey team for years.

“He kept pretty quiet about it, never looking for the microphone, TV camera or getting his picture in the paper. He did it because he believed it was the right thing to do.”

As humble as he may have been, Shannon and White agree that anyone who knew this dedicated family man won’t soon forget him.

“He was involved in so much,” says White. “He was a generous man, he was always willing to take chances, and he took pride in everything he did. He will be missed.”

Class Notes

1950s

BILL CHRISTIE, BEng '50 (NSTC electrical), adds this P.S. to his letter printed in Engineering Class Notes Fall 2013: "With the demise of a slightly older colleague in June 2014, I have become, for the rest of my life, the oldest living Canadian Admiral."

1960s

GARY C. BRUCE, BEng '68 (NSTC mechanical), retired from Petro-Canada in 2003 after 35 years in the oil industry. He joined several public and private boards upon retiring, including the Board of Governors of Acadia University, retiring from his last board in April this year. He was awarded the Engineering Institute of Canada's Julian C Smith Medal for his work in development of Canada's resources and an Honorary Doctorate of Law (LLD) from Memorial University of Newfoundland for his contribution to the development of the oil industry offshore Newfoundland & Labrador. Gary and his wife Gwen divide their time between their homes in Fredericton, NB and Bradenton, Fla. They enjoy visiting their four children and four grandchildren, and very much enjoy seeing old friends.

BRIAN WARNOCK, BEng '69 (NSTC chemical), Wanda and I have located to Bozeman MT for the summers where I can fish till I drop. Thanks to technology, I can still manage our firms' law practice with a fly rod handy. Winter still finds us in Wickenburg, AZ. Drop by if you are in the neighborhood.

WILLIAM BEZANSON, BEng '67, MEng '69 (NSTC mechanical), has written: *I Believe: A Rosicrucian Looks at Christianity and Spirituality*. The book has been published by General Store Publishing House Inc. and recasts the Nicene Creed in a more mystical and relevant mold. This is his third book in a series on contributing to saving humanity and the world through

encouraging readers to have more mystical spirituality and less organized religion. Bill works actively on that subject, hoping to motivate people to take seriously their responsibility to work on the spiritual evolution of humanity. His other books are on systems design, and the Golden Ratio. He is retired, after a career primarily with Nortel Networks, and lives in Ottawa with his wife, Susan.

1970s

DONALD J. PETERS, BEng '72 (NSTC industrial), Donald wishes to announce that he is now an Associate with CanAm Health Management Consulting, a new Atlantic Canadian firm based in Nova Scotia providing a full range of consulting services to clients in the health care sector. Donald retired in 2013, five years after being appointed by the Government of New Brunswick as the first President / CEO of Horizon Health Network. For 5 years he led the restructuring of the English health authorities in NB. During this time Donald's leadership earned him recognition as one of Atlantic Canada's Top 50 CEOs in 2010, 2011 and 2012. donaldpeters12@gmail.com



CONRAD LELIÈVRE, PEng '75 (NSTC mechanical), was awarded the F.H. Sexton Gold Medal by Engineers Nova Scotia at the Gold Medal Dinner and Dance held at the Old Orchard Inn on Friday September 26th. The F.H. Sexton Gold Medal is Engineers Nova Scotia's highest award and is presented each year to a professional engineer who has made a significant contribution to the association and to the profession.

JAY MACDONALD, BEng '79 (NSTC civil), after 30 years with Chevron in Calgary and California, I retired to near Yosemite Park in the beautiful Sierra foothills. I married a decade ago and my wife and I are enjoying the country living. Classmates are welcome to make contact and come visit the amazing central California region.

1980s

WADIH FARES: 2014 RED CROSS HUMANITARIAN AWARD FOR NOVA SCOTIA



WADIH FARES, BEng '80 (TUNS), since moving to Nova Scotia from Lebanon almost 40 years ago, Mr. Fares has lived by a philosophy that among the rewards for hard work, life-long learning and entrepreneurial success is the opportunity to give back and to celebrate their diversity and humanitarian spirit.

Regarded for his entrepreneurial spirit and service to the community, Mr. Fares is known as a talented innovator, and gives back to the community in wide-ranging ways – most notably perhaps, has been his ability to build bridges between Canadian and Lebanese communities both locally and nationally. Mr. Fares also sits on the university's Board of Governors and chairs the Operations Committee.

Congratulations on receiving the Red Cross Humanitarian Award, and for demonstrating the best of Nova Scotia's humanitarian spirit.

GRANT LYNDS, BEng '88 (TUNS mechanical), a few of my classmates and I were considering travelling to attend the Engineering Golf Tournament last fall to mark the 25th anniversary of our graduation from TUNS, but unfortunately we could not make that trip happen. Instead, we were able to get together at my house in Ottawa over the Labour Day weekend to celebrate our anniversary.



Pictured above are Mech Eng '88 classmates **ALEX LORIMER** (Alex lives in Mississauga but was in Ottawa to move his son into residence at the University of Ottawa), Grant Lynds and **CARL BURLOCK**. Also in attendance was another TUNS graduate, **GLENDA BURLOCK (Civil '89)**. We also connected with another classmate, **DENIS LANOË**, via Skype (Denis lives in Sydney, NS).

1990S

STEVE KEMP, BEng '94, MASC '98 (TUNS), Vice-President of Sustainability – Buildings for MMM Group Limited, Steve won the Green Building Champion Leadership Award at the Canada Green Building Council Awards in Toronto. The award recognized Steve as one of Canada's experts in sustainable building design, green technology research and building energy simulations. In addition to work on dozens of green building projects across North America, Steve has led the industry as a LEED Faculty, a Technical Advisory Group Chair at the CaGBC, and President of the International Building Performance Simulation Association (Canada). Steve leads MMM's sustainability group in the buildings division, leading a team he joined straight out of university in 1995.

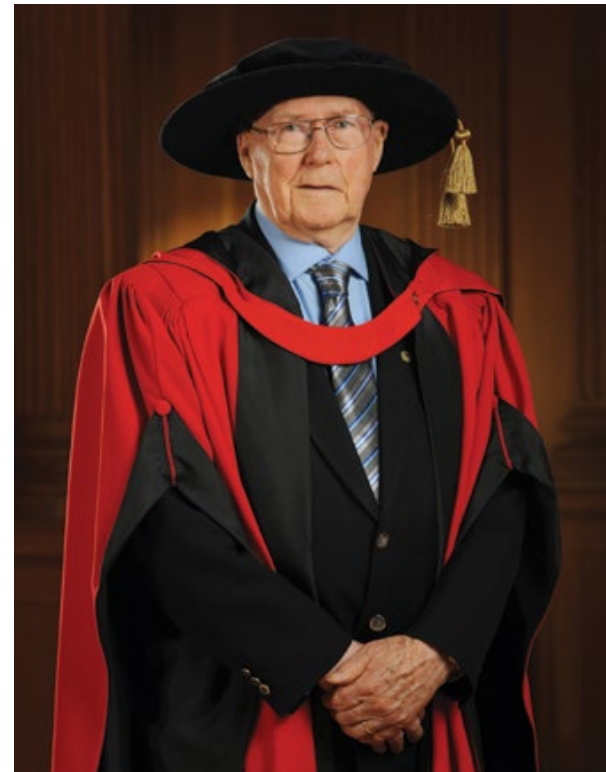
Honorary degree granted to engineering leader

CARROLL OLIVER BRAWNER, DOCTOR OF LAWS (HONORIS CAUSA) MAY 2014

Congratulations to Carroll Oliver Brawner, on receiving an Honorary Degree this past spring. Mr. Brawner is known and respected worldwide for his contributions to open-pit mining and geotechnical engineering, and became an authority on the design, construction and maintenance of stable tailings dams. His advice was always grounded in a desire to protect the safety of people, property and the environment.

Mr. Brawner was born in Saskatoon, Saskatchewan in 1929. He graduated in civil engineering from the University of Manitoba in 1953 and completed a Master of Science degree in soil mechanics from Nova Scotia Technical College in 1958. He worked in British Columbia with the province's Department of Highways, including involvement in major Trans-Canada Highway expansions in Rogers Pass, Kicking Horse and Fraser Canyons, before joining geotechnical-consulting firm Golder Associates. Today, the company has over 8,000 employees in some 180 offices around the world, thanks in large part to Mr. Brawner's early contributions.

In 1978, at the height of his engineering career, Mr. Brawner was appointed a Professor of Mining Engineering in the University of British Columbia's Department of Mineral Engineering, where he inspired hundreds of engineering students during his tenure in academia. He has contributed to the global advancement of geotechnical engineering through dozens of published technical papers and numerous lectures delivered at more than 90 universities and institutes. He has edited ten major geotechnical



texts published by the Society for Mining, Metallurgy and Exploration, served on numerous technical committees and chaired important industry conferences.

He has received many awards from North American engineering and mining organizations for his contributions to his profession. In 2008, Mr. Brawner was inducted into the Canadian Mining Hall of Fame.

Class Notes

SARAH DEVEREAUX: 2014 CANADA'S MOST POWERFUL WOMEN TOP 100 AWARD



SARAH DEVEREAUX, BEng'93 (TUNS), and MEng'99, received the 2014 Canada's Most Powerful Women: Top 100 Award, in the Sunlife Financial Trailblazers & Trendsetters category. Sarah has 20 years' experience as a civil engineer, and has directed a range of waste management and assignments, from the development of strategies to the design and construction of landfills. She is currently a partner at Dillon Consulting.

In her award bio she listed the following three leadership qualities as the ones she follows: "1. My one mantra is that there is only one person in the world whom I can control and that's me. If I want things to change, I need to lead by example. 2. If there is something you want, never give up. 3. Model your behaviour based on the position you want, not the one you have."

Sarah was presented with the award on November 27, at the Gala event held at the Toronto Convention Centre, and she will also be featured in the December issue of the *Financial Post Magazine*.

TIM MARRIOTT, BEng '98 (TUNS mechanical), Tim has been working with Halliburton Project Management since 1998. He started off working on East Coast operations in NS and NFLD, and from there his career has led him to Calgary, Tripoli, Dubai, Libya, and Muscat, Oman. In 2014 Tim returned to Dubai and currently resides there with his family. Tim is the Regional Business Development Manager for Integrated Project Management with Halliburton, and takes frequent trips to Saudi, Iraq, and Oman.

2000s

ADEFISAYO ADEGOKE, BEng '06 MAsc ECED, Adefisayo relocated to Tampa, Florida and got married on August 9, 2014

KAITLYN SMITH, BEng'10 (chemical), three couples from the chemical engineering class of 2010 were married this year in 2014. I think it is awesome that from a small class we had three couples that all stayed together, and we all live/work in Calgary as professional engineers: **KAITLYN MCNUTT & SCOTT SMITH** married on January 18 in Jamaica; **HEATHER MACDONALD & JAMES MATTIE** married on September 13 in Halifax; **JANE SIMINGTON & JOHN ANDREW MASON** married on October 4 in Pictou. (Pictured below are Kaitlyn and Scott in Jamaica, on their wedding day.)



PEI ALUMNI RECEPTION



The PEI alumni reception was held at Don Gillis' home in Mermaid, PEI this past summer. Guests enjoyed a delicious mussel boil, and reconnected with friends and classmates.

HOMECOMING 2014



Homecoming 2014 was a great success. The Faculty of Engineering welcomed the class of 1964 for their 50th class reunion. Over the three days, alumni enjoyed a class dinner at Stories restaurant, a Dean's Coffee Club session, and a farewell brunch. Throughout the reunion, stories and memories were shared, and friends reconnected. Mark your calendars now for Homecoming 2015, October 15-17, when the class of 1965 will celebrate 50 years, and alumni from other classes will also celebrate significant reunion years.

Introducing James Craig

We are pleased to welcome James Craig as the new Development Officer for the Faculty of Engineering.

James will focus on major gift fundraising for the Faculty of Engineering, and will be a key member of our IDEA Building Campaign team. James is a Professional Engineer and is a 1991 Industrial Engineering graduate who has also completed the core Electrical Engineering



program at Dalhousie while working as an officer in the Canadian Navy. He has over 20 years of experience in business, creating and running several companies

and business units in Atlantic Canada. James has a proven track record in raising significant amounts of funding for new business ventures, and has an excellent background in consulting within the software development and manufacturing sectors.

James is passionate about Dalhousie Engineering and has been a sessional lecturer in for the last 12 years. In his spare time, he loves to spend time with his wife, son and daughter enjoying activities that range from travelling, sailing, windsurfing and snowboarding.



MARK GRADY, BACHELOR OF ENGINEERING
(CHEMICAL), CLASS OF 2016

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Wednesday, March 4, 9:30 am
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