



THE
UNIVERSITY OF
BRITISH
COLUMBIA

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Faculty of Applied Science
Engineering News

Are we ready for disaster?

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José Marti and his group focus on power engineering

Ever wondered who is working on how to restore power, water, gas or other lifelines for civilized living after a major earthquake or similar disaster in our province? Our severe winter this year with strong winds and felled trees on hydro lines left many without power for considerable periods of time. This, along with the lengthy boil water advisory, gave us an idea of what it would be like to be without utilities we normally take for granted.

UBC Electrical and Computer Engineering Professor José Marti is working extensively on related problems as part of a large, federal-government-sponsored consortium called Public Safety and Emergency Preparedness, Canada.

The task: to create software that reacts in real time to damage in any of our utilities' systems and allows coordination of the deployment of resources in the most effective way. The research is for what Marti calls "a system of systems" for priority response to disaster.

"The two top priorities would be to decide which course of action would save the most human lives and how best to return the systems to normalcy," Marti explains. "Coordinated action is necessary as many systems may be dependent on one another. It's not just large power systems that are involved, but telecommunications, gas lines and water systems as well."

As the largest part of the consortium, with \$1.3 million in funding, Marti leads a twelve-member group of researchers—11 from UBC and a system visualization expert from SFU—in the Joint Infrastructure Interdependencies Research Project (JIIRP). UBC members come from various engineering



Marti works in front of his computer simulator on predictions and contingencies for damage to UBC in the event of a disaster.

departments, with one member from the Sauder School of Business and a psychologist from the School of Medicine.

"We need the psychology expertise on the research team to predict how people would behave under the stress of a disaster and take this into consideration," explains Marti. "Similarly, the business expertise is needed because of the political and economic aspects of the interconnection of our utilities on the North American continent."

"For instance, electricity has become a commodity," says Marti, "and because BC Hydro is a Crown Corporation, provincial government decisions influence the amount of power to be sold—even in an emergency."

The JIIRP research rests on considerable work already completed under Marti for software that gives real-time assessment of multiple interlinked power systems in the North American Western Grid. "Power is transmitted over large distances," he says, "and the software assesses damage and provides predictions and responses."

Message from the Dean



Welcome to the spring 2007 issue of *Ingenuity*. We were honoured to have President Stephen Toope speak at a recent meeting of the Engineering Advisory Council. Arising from this, and in place of my usual message, President Toope has kindly agreed to summarize his statement to the Council through the following message to our readers. On behalf of the Faculty of Applied Science and all our readers, I would again like to welcome President Toope to UBC and to thank him for his considerable engagement with the Faculty. —**Michael Isaacson**, Dean



I am pleased to have this opportunity to address the readers of *Ingenuity* through this message, and to share with you my sense of UBC's current status, the alignment of UBC Engineering with UBC's vision,

its contributions to UBC's reputation, and my thoughts on the outlook for Engineering at UBC.

UBC has developed an exciting vision *Trek 2010* that I embrace wholeheartedly. It includes a number of goals and strategies that together provide a very clear way forward for the University. We are now focused on an alignment of the University's priorities and activities with the vision.

The last few years have seen considerable expansion at UBC. There have been notable increases in the numbers of students and faculty members; a greater diversity in programs; the establishment of a distinct campus, UBC Okanagan; significant growth in the physical infrastructure; an expansion of research activities; and an enhancement of the University's overall standing. In fact, UBC now consistently places among the world's 50 best universities—as indicated, for example, in rankings carried out by *Newsweek* and *The Times Higher Education Supplement*.

Engineering is very much one of UBC's flagship areas of activity and a critical contributor to its successes. The Faculty of Applied Science was one of UBC's three founding faculties in 1915, and its engineers were among UBC's first graduating class. Our engineering programs have an outstanding reputation for quality and innovation; our engineering faculty members are world-renowned, winning many national and international awards; and our engineering graduates and research are generating enormous benefits for Canada's economic development and quality of life.

The Faculty has seen many accomplishments during Michael's term as Dean. Under his leadership, we have seen a significant expansion

in the size of the engineering programs; an increased emphasis on project-based learning, and on the development of communication and business skills and meta-skills (including areas such as leadership, teamwork, and global citizenship) in our students. The Faculty's operating budget has increased substantially; there has been significant infrastructure renewal and expansion; the Faculty of Applied Science has become our only dual-campus faculty, through the establishment of the School of Engineering at UBC Okanagan; and linkages with the Faculty's external communities have been greatly enhanced.

As you can see, the current status of UBC Engineering is certainly enviable. I also know that its long-term outlook is very positive as well. However, in the near-term, there is, unfortunately, a somewhat cautionary note in that, despite UBC's accomplishments, we are facing significant funding challenges. On the Vancouver campus these arise largely out of a misalignment between UBC's recent growth and available resources. Over the next few years, we will need to undergo a process of fairly significant budget reductions. However, we are committed to undertaking these in a careful, strategic manner that will assure a focus on excellence and on our areas of highest priority. At the Okanagan campus, enrolment challenges mean that we will need to develop the programs more slowly than initially planned.

I am confident that these short-term adjustments will not have a long-term negative impact on the Faculty's upward trajectory, and on its excellence in engineering education and research. Thus, I know that UBC Engineering will continue to rank amongst the top tier of engineering schools.

I would like to end by paying tribute to all faculty and staff in Applied Science for their outstanding accomplishments and contributions—collectively, they have assured the Faculty's high standing and positive outlook. Thank you also to all *Ingenuity* readers for your support of Engineering at UBC.

Stephen Toope
President

Leadership in Engineering Physics

Innovative research projects,
interactive teaching, outreach

The design of a robot to facilitate profiling of cancer biopsy tissues is only one of a number of innovative projects Engineering Physics Director Andre Marziali supervises in his Applied Biophysics Laboratory. His strong commitment to both education and research is apparent in the degree to which he involves Engineering Physics (ENPH) undergraduate students in his research program.

It was ENPH students who designed and built the robot—which has a novel liquid-sensing pin that applies a few nanolitres of a particular reagent to minute biopsy samples on a single slide. This is used for rapid profiling of different genetic markers.

“It capitalizes on the students’ in-depth knowledge of engineering physics and their passion for the subject,” says Marziali, “but it also has a practical application. The students learn by doing. The first prototype was built entirely by undergraduates and the patent application includes them as the inventors.”

Since coming to UBC in 1998, Marziali has been heavily involved in teaching innovation. In 2003 he was awarded the UBC Killam Teaching Prize, partly due to his introduction of electronic “clickers” for interactive teaching.

“We’ve found the infrared response system during lectures to be very

valuable in increasing interaction among students,” says Marziali, who also received the Canadian Association of Physicists’ Medal for Excellence in Teaching in 2005. As an Assistant Professor, he introduced an innovative robotics course to give ENPH students more opportunity for early hands-on experience. He is currently on the Advisory Board of the Carl Wieman Science Education Initiative to focus on improved teaching methods in science.

As director of the Engineering Physics Program since January 2006, Marziali has maintained the program’s focus on a strong foundation in physics and mathematics, but has worked to broaden the scope of applications available to students to include biotechnology and bioengineering.

A recent change implemented by Marziali is the broadening of the choice of electives to include specializations in astronomy, biophysics, biotechnology, commerce, materials and other disciplines. Rapid changes in technology, as well as societal needs, make interdisciplinary expertise extremely valuable, according to Marziali, who is also emphasizing outreach and recruitment.

One area of focus is outreach to female students. “We are removing possible misconceptions they



Program Director Andre Marziali

may have about engineering in our recruitment programs for young women. Those currently in the program are first rate. We don’t want any students who have a passion for the subject to miss out.”

Marziali also does as much as he can to involve and interest younger students at school presentations and science fairs, and works with Science World on an annual robotics demonstration.

Having received his BAsC in Engineering Physics from UBC in 1989 and his PhD in Physics from Stanford in 1994, Marziali returned to his alma mater in 1998 to collaborate with Nobel Laureate Michael Smith and others in establishing a major genomics effort in B.C. He obtained his P.Eng. designation in 2001.

One of his many professional commitments is as director of the Genome B.C. Technology Development Platform. This is a group of engineers dedicated to providing technology and

engineering support to health research in our province. As part of this effort, he recently received a \$2-million grant from Western Economic Diversification Canada to set up engineering support and training centres at St. Paul’s Hospital, the Genome Sciences Centre, the B.C. Cancer Agency, UBC, BCIT, and the University of Victoria Proteomics Centre. All the engineers currently involved in this project were trained in Marziali’s laboratory, and many are Engineering Physics alumni.

“Engineering Physics students tend to be very social, to like challenges, and are very inventive,” says Marziali. “We only take 60 students each year, but those who join are extremely motivated to make a difference in the world.”

A crash course in leadership skills

Students host WEC 2007

Excitement ran high as over 200 engineering students from nine western Canadian universities participated in the 2007 Western Engineering Competition (WEC) hosted by UBC Engineering students this past January.

This was a chance for fledging engineers to hone their skills in six

competition categories: junior design, senior design, innovative design, consulting engineering, engineering communication and impromptu debate.

"It's not all about equations," says chair of the organizing committee Nina Selak. "Students at the competitions learn communication, presentation and teamwork skills they can't get in the classroom."

Selak, a fourth-year Electrical Engineering student who also took on the role of VP Sponsorship, managed the event with

four dedicated executive committee members: fourth-year Mining Engineering student Tim Leaver (VP Competitions); fourth-year Engineering Physics student Chris McCann (VP Hospitality); second-year Mining Engineering student Mike Oxciano (VP Communications); and fourth-year Mining Engineering student Jasmine Rai (VP Events).

The learning curve was steep for the organizing committee and the workload more than anticipated when they submitted their proposal to host this regional event at UBC.

Leaver sums up the experience for the committee. "We learned what it

takes for people to work towards a common goal. We had to work cohesively as a committee, organize volunteers, and keep track of our outside suppliers and sponsors," he said. "It also taught us the importance of constantly communicating with everyone involved and to show how much we appreciated their contribution. I'm sure these will be skills that will serve me well in the workplace."

As for the competitions, UBC student teams came in third in four of the six competitions.

Congratulations to all the students who participated for taking advantage of a superb learning experience!



UBC Junior Design Team A celebrates its load-bearing cable car's self-propulsion along the wires.

Are we ready for disaster?... Continued from page 1

"Once power systems were interconnected on this grid, each needed less reserve to offset weather damage and repair schedules. However, when something is wrong in one system, there is an adverse effect on the others."

Traditionally, the B.C. Transmission Corporation—the agency responsible for transmitting electric power in the province—has simulated disasters and responses offline, building tables of their predicted state. But, this tends to be a slow process. It is not in real time.

The question currently under discussion with the corporation is whether the new UBC software for faster, on-line real-time predictions and responses should replace traditional methods entirely, or whether select parts of the new technology should be incorporated into the existing system. Either way, this software will be an advance.

But, we have to consider other utilities as well. "The bottom line," says Marti, "is researchers need

to look at all the systems as a whole and develop assessments, predictions and responses in real time for an effective emergency response."

How far along is the present JIIRP research for a "system of systems?" How quickly can we expect to recover essential services in priority order following major disruptions? Not long, according to Marti. The initial test of the simulator will be on electric, gas, water and telecommunications on the UBC campus.

"We're at least one or two years away from a broader application," says Marti. "Naturally, our first priorities will be hospitals, care homes, schools and other public institutions."

"So, if we count the family as the smallest system, progressing to neighbourhoods, communities, cities, regions, and so on, the smallest system has to be self-sufficient until the major systems are repaired and priority services resumed."

With extreme weather and the ever-present threat of terrorist acts and earthquakes, this means we should all hang on to our water containers, propane stoves and flashlights for just a bit longer.

Second-year students set to excel

UBC Okanagan School of Engineering develops

The UBC Okanagan School of Engineering is like no other in the world, according to second-year student Rachael L'Orsa.

"Our professors are absolutely fantastic," says L'Orsa. "We could not ask for better. They are phenomenal and are drawn from a wide pool of interests. We're lucky they are passionate about teaching—even our tutorials are taught by professors; and we have a small enough class that we are able to get to know one another."

The first- and second-year programs, *Engineering One* and *Engineering Two*, are unique and give a solid grounding relevant to further study in civil, electrical, or mechanical engineering.

Many of the second-year students came straight from a B.C. high school, but two are from out-of-province, two are from overseas, and two are mature students.

L'Orsa is one of the latter. "Engineering was a logical choice for me. I would often disassemble objects as a child, and I have always enjoyed math

and physics," she explains, "but after high school, I put my plans for university on hold and worked in forestry and as a paramedic. My provincial scholarship would have expired in 2005, which was what prompted me to finally further my education."

Although L'Orsa finds the course load for second year heavy, she somehow manages to take advantage of extra-curricular activities, such as the 2007 Wood Catapult Competition held in Vancouver in February. Her team brought the bronze home to Kelowna!

Linda Cutler is another mature student and one of seven women in the second-year class of 43. Her enthusiasm for the program mirrors L'Orsa's, with the additional factor of four young daughters living in Nelson, waiting for her to commute home every other weekend.

"I couldn't do it if there was not a campus here," says Cutler, mother of daughters aged 14, 12, 10 and 7 years. "They all said I should do it. It was always part of my plan to go to school and get a degree,

but I had my first daughter when I was 22."

Cutler, who had always struggled with mathematics, initially started course work for a BSc at Selkirk College. She credits a wonderful mathematics teacher there for helping her overcome her struggle and for suggesting she consider a four-year degree program in engineering.

"This was the last thing I thought I would do," she says. "But UBCO Engineering fit all my criteria. I needed to be close to home. The field sounded exciting. There are lots of jobs in engineering. There's flexibility and I would be able to support my family."

After second year, students continue their engineering education by applying for a specialization offered at either the Okanagan or Vancouver campuses. Cutler expects to go into Civil Engineering in third year and says that, although she is older than the other students, they seem serious and mature and are easy to talk to and work with on projects.

Cutler agrees with L'Orsa's high praise for the school, citing the faculty's flexible attitude with the co-operative program.

For the September to December 2007 co-op term, she will be a research assistant with the school, but will be able to operate from her home. She values this opportunity to be around her family, but says with four children she is forced to be very organized—"I do not procrastinate at all!"

School Director Spiro Yannacopoulos is pleased with the way the program is developing and with the opportunity it has given him to practice his philosophy of helping others attain their goals.

"The second-year cohort is special, as they will be our first graduates," explains Yannacopoulos. "We are learning from them what they need to excel in the program. They are a dedicated and dynamic group."

The inaugural class of UBC Okanagan Engineering students has a special status.



Bud Mortenson

Faculty Development Report on Giving

There are many ways to give back to the Faculty of Applied Science at UBC: mentor a student; recruit an engineering graduate; create a co-op student placement; share your experience with current students; or financially support the teaching and research programs and activities that are meaningful to you.

Many of our alumni, friends and industry partners gave back to UBC Engineering

this year with generous contributions in support of the Faculty's teaching and research efforts.

Over the next few pages, you will read about the generous support of alumni and individuals like Louis Gall (BASC '44) and Drs. Charles and Doreen Laszlo. As well, you will read about donations from industry partners Alcan Inc. and Talisman Energy.

It has been a real pleasure working with our many supporters on a number of new initiatives as

well as existing programs and awards. Each and every gift promotes engineering excellence and creates an environment for enhanced teaching and research.

From the Applied Science Development team, I would like to express our sincere appreciation for the generous contributions of all our donors: alumni, individuals and corporations.

If you would like to find out more about the Faculty's current priority projects or the various ways



to give a donation or estate gift, please contact me at 604-822-1329 or hillary.gosselin@ubc.ca.

Hillary Gosselin
Director of Development

Alcan shows its metal

Supporting aluminum research to benefit the environment

Alcan Inc. enhanced its 30-year giving history to the Faculty with a new contribution of \$250,000 to boost its support for the Alcan Chair in Materials Process Engineering, increasing its investment in teaching and research focused on Alcan's core business—aluminum.

The Alcan Chair in Materials Process Engineering was first established in 1994 with a \$500,000 contribution from Alcan and matching support from the University to create a \$1.2 million endowment. The Chair's research concentrates on process metallurgy to significantly

improve processing efficiency and decrease impacts on the environment—important goals that UBC and Alcan share.

This latest contribution by Alcan presented the opportunity to name Materials Engineering Associate Professor Mary Wells as the new Alcan Chairholder. Her research focuses on the microstructure modeling of industrial aluminum processes. She is an advocate of partnerships between industry and universities—her participation in such collaborations in the past proved to her the importance and significance research and technology play in industry.

Alcan has been a consistent supporter of UBC through its contributions to other research and teaching activities, such as the Chair in Hydrometallurgy, the Alcan Research Fellowship, and on-going placements of co-op students.



From left: Applied Science Associate Dean Savvas Hatzikiriakos, Materials Engineering Head Steve Cockcroft, Alcan's Director of the Arvida Research and Development Centre Raymond Faucher, Chairholder Mary Wells, and Dean Michael Isaacson unveil the Alcan Chair plaque during a celebratory event on November 1, 2006.

Charles Laszlo's latest "first"

New professorship in biomedical engineering

Dr. Charles Laszlo, Professor Emeritus, Electrical and Computer Engineering, reaffirmed his lifetime of commitment to biomedical engineering with an outstanding gift of \$500,000 to establish the Charles A. Laszlo Professorship in Biomedical Engineering. This contribution came from Dr. Laszlo and his wife Dr. Doreen Laszlo through their CalDor Foundation.

The Professorship was first announced on September 7, 2006 at the launch of UBC's new Biomedical Engineering Program that incorporates three new graduate degrees and two undergraduate options in biomedical engineering. Program Director Ezra Kwok spoke at the event of Dr. Laszlo's lengthy history of biomedical engineering initiatives at UBC.

Dr. Laszlo joined UBC in 1974—the same year that

he became the first biomedical engineer to receive a National Health Scientist Award. In 1980, he became first Director of the UBC Clinical Engineering Program; and for 13 years he led this program, bridging engineering principles, the life sciences, and clinical applications in order to lay the groundwork for Biomedical Engineering at UBC.

Another accomplishment in a long list of "firsts" is Dr. Laszlo's appointment as the first Director of the Institute for Hearing Accessibility Research at UBC in 1994. In fact, a major part of Dr. Laszlo's life's work has been dedicated to technology to assist hearing impaired people communicate. With premature hearing loss in his early twenties, Dr. Laszlo knows first hand the daily challenges faced by the hard

of hearing, as well as the profound impact biomedical engineering can have on enhancing their health care options and quality of life.

Since retiring in 1997, Dr. Laszlo has remained involved in international and national organizations promoting hearing health care, providing services and making technologies available to hard of hearing people world-wide. Among a long list of accolades for Dr. Laszlo's immense body of work are the National IWAY Award for Assistive Technologies, the Gold Medal of the Canadian Council of Professional Engineers, his call to the Order of British Columbia, and his membership in the Order of Canada in 1998.

The Faculty of Applied Science is proud and honoured to have a Professorship in Dr. Laszlo's name. In January, the Faculty and biomedical engineering community celebrated as Electrical and Computer Engineering Professor Tim Salcudean was announced as the



inaugural Charles A. Laszlo Professor in Biomedical Engineering.

Equally committed to the success of this Professorship and the Biomedical Engineering Program, the Faculty is currently seeking further support for the Charles A. Laszlo Professorship so that the endowment can reach the required \$1-million level, to ensure the Professorship in perpetuity.

If you would like more information on how you can become a part of this important initiative, please contact:

Hillary Gosselin
Director of Development
T: 604-822-1329
E: hillary.gosselin@ubc.ca

In January, the Faculty and biomedical engineering community celebrated as Electrical and Computer Engineering Professor Tim Salcudean was announced as the inaugural Charles A. Laszlo Professor in Biomedical Engineering.



From left: Program Director Ezra Kwok, Professorship holder Tim Salcudean, Charles Laszlo and Dean Michael Isaacson during the celebratory event on January 23, 2007.

Talisman Energy invests in Canadian youth

New scholarships, new recruits

Engineering students were celebrating well into the new year on February 2, 2007 when Talisman Energy launched two new scholarships in the Departments of Chemical and Biological Engineering and Mechanical Engineering.

Talisman Energy, one of the most internationally focused of Canada's senior oil and gas companies, recently donated \$280,000 to the Faculty to create two annual \$9,000 scholarships for students of Chemical Engineering and Mechanical Engineering. The awards are the highest value scholarships currently available in each of the disciplines. Created with the support of the Faculty, these prestigious



scholarships are awarded to students with outstanding academic performance as well as a demonstrated interest in the energy sector.

Students Kyle Loutet and Troy Adebar were the inaugural recipients of the Talisman Energy Scholarships. Having spent his first engineering co-op work term with Talisman Energy in the Grand Prairie field office, Loutet says, "my work term at Talisman gave me the opportunity to learn from some truly outstanding people. It is with great honour that I accept this scholarship."

Established in response to the increasing growth of the energy sector and associated recruitment challenges, "these scholarships represent a long-term investment in our most valuable resource—Canadian youth," says Dr. Jim Buckee, President and CEO of Talisman Energy. "I believe we are helping to foster high-level study, leading to careers in a challenging and rewarding industry which increasingly requires innovation and advanced technology."

Talisman Energy has been a significant source of leadership, support and employment for the Faculty and its alumni over the past 15 years. Chemical engineering graduates David Maddison (BASc '79), VP Northern District, and Reg Manhas (BASc '89, LLB '94), Manager of Corporate Responsibility and Government Affairs, are excellent examples of UBC Engineering alumni leading the company today.

From left: Reg Manhas, Dave Maddison, Kyle Loutet, and Troy Adebar

Mining alumnus Louis Gall gives back

Scholarship encourages student leaders

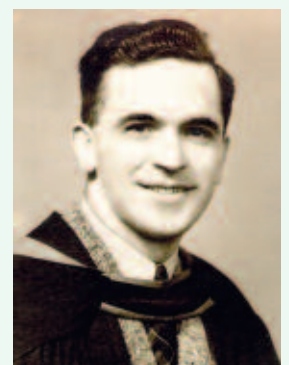
Working in the coal mines of British Columbia in the early forties was hard for Louis Gall (BASc '44). As a young high school and later a UBC student, Mr. Gall felt the toll of the demanding job and had compassion for his fellow workmates—some of whom were 40 years his senior and worn out from the work. This concern for the welfare of others is something Mr. Gall has practiced throughout his career by investing in community service and, most recently, creating an annual service award for mining engineering students.

The Louis J. Gall Award in Mining Engineering is a \$9,000 endowed award for students of mining engineering with satisfactory academic standing, who have demonstrated leadership through partici-

pation in campus and community activities. Mr. Gall contributed a gift of shares of over \$170,000 to establish the award and noted, "I did well investing in mining and want to reinvest in the youth of that industry."

Mr. Gall spent the majority of his lengthy career in the Alberta steel industry allied to mining equipment. He spent 31 years with Edmonton Ironworks, after which he started his own company designing and fabricating equipment for the mining industry.

Although he retired nearly two years ago, Mr. Gall is still active in mine prospecting and hopes his gift reaches young engineers with a positive outlook and attitude akin to his own.



Louis Gall in 1944.

Alumni update

Greetings from Applied Science Alumni Relations and Events—your connection to your alma mater! This issue of *Ingenuity* brings you highlights from several engineering reunions and an overview of the benefits of connecting alumni and students. *Ingenuity* is also proud to profile one of UBC Engineering's prominent alumni—Basil J. Peters. Read how this EECE graduate has used his passion for technology and his affinity for entrepreneurship to become one of Vancouver's most distinguished entrepreneurs.

We are pleased to work with our graduates to assist you in:

- Connecting with your classmates and other alumni
- Rediscovering UBC—finding out what is here today
- Accessing current students—bridging past and present

If you would like to start planning your class reunion, know more about student-alumni events, or ensure we are in touch with you, please contact us at 604-822-9454 or email alumni@apsc.ubc.ca.

Editor's Note: At the time this issue went to press, May Cordeiro, your Alumni Relations Officer, was on extended leave from her position. We hope that you will find her back at her desk by the time you read this note. If not, rest assured that we will still be answering your phone calls and emails and assisting you while we look forward to her return!

Students and Alumni

It is our goal to engage alumni in the life of the University and the activity of the Faculty of Applied Science. As part of that engagement, we welcome the participation of our alumni in several annual events to connect with today's engineering students. Students appreciate and benefit from meaningful interaction with alumni; sharing life experiences and lessons learned with future engineers will foster the intellectual leadership of tomorrow. The following events were organized and hosted by students to engage with engineering alumni.

Annual Mining Dinner—February 3, 2007

Students of the Norman B. Keevil Institute of Mining Engineering hosted the 11th annual Mining Dinner on February 3, 2007 for alumni and industry friends. Mining students and faculty members enjoyed toasting each other along with valued alumni, industry partners, award winners and donors. Special guests included two former Heads of Mining Engineering—keynote speaker George Poling and Blue Evans.

From left: Tom Broddy (MINE '84), third-year student Mike Fuller, Mike Allan (MINE '73), and his wife Gloria Allan mingle during the event.



Old Red New Red—February 6, 2007

They weren't "seeing red"—there was a "sea of red" on February 6, 2007 at the annual engineering event that brings undergraduate engineering students and engineering alumni together all dressed in red. Held at Cecil Green Park, the colourfully clad students competed in the ball modelling competition that was judged by alumni and industry friends on campus as part of Engineering Week. Mining Engineering took first place, with Materials in second place and Mechanical in third.



2006 Reunion Highlights

CIVL '49—57th Reunion—September 13, 2006

Always enthusiastic for a good time and another chance to meet up with friends, this group connects annually to celebrate life together. At this reunion, classmates and guests enjoyed lunch at the Hollyburn Country Club (no photo available).

CIVL '71—35th Reunion—November 4, 2006

The highlight of the 35th reunion for the Civil Engineering Class of 1971 (below) was the brief presentation and personal update given by each of the 18 attending graduates. They also enjoyed catching up with each other at the reception dinner held in the Penthouse of the Graduate Student Centre.



EECE '71—35th Reunion—November 24, 2006

A dozen electrical engineers from the Class of 1971 enjoyed an evening getting reacquainted and reminiscing at their reunion dinner at campus pub Mahoney's & Sons. Department Head Vijay Bhargava also led a tour of the Kaiser and MacLeod Buildings, impressing the alumni with the improved equipment, vast student space, and large scope of course and lecture options compared with 1971.

A committee of the Class of '71 is raising funds to establish an annual award for EECE students. If you would like to learn more, email brian.lee@bctc.com.

To view photos from this reunion, visit: <http://picasaweb.google.com/garystephenwong/EECEClassOf71Reunion?authkey=6LGEpzmLfm>

From left, front row: Gary Wong, Al Novakowski, Jim McEwen, and Dan Bowditch; back row: Vijay Bhargava, Michael Davies, Bill Myrtle, Bob Webster, Ron Clevon, Jim Gurney, Garry Anderson, Rick Hoggarth, Gunther Schrack, Bob Gilbert, and David Pulfrey. Missing from photo: Roy Macmillan.

CIVL '56—50th reunion—September 29, 2006

Classmates and their guests enjoyed dinner at the Quilchena Golf and Country Club.

Below, from left: Shirley and Don Dodge, Ron Lyall, George Prince, Alan Drab, Terry and Shirley Mulder, Ralph and Joan Spinney, and Jean and John MacLeod.



BASc '46—60th Reunion—November 22, 2006

2006 marked a very special year for the Class of 1946—its Diamond Anniversary. A special thanks to Gordon “Bus” Ellis who organized a cocktail party and luncheon at the Point Grey Golf Club. The 23 graduates and 11 wives and sweethearts in attendance made sure the event did not get too rambunctious. All agreed to meet again in 2011 to celebrate their 65th reunion. (Photo below and text courtesy of Al Lewis.)



Upcoming Reunions

UBC's annual Alumni Weekend will be held September 14-16, 2007, and events for the classes of '57, '82 and '97 are being organized by UBC Alumni Affairs. As well, the Faculty is planning reunions around Alumni Weekend for BAsC '57, BAsC '67, and BAsC '77. The following reunions are also being planned:

Class	Date	Details
BAsC '47	June 1, 2007	Lunch and a tour of the Chemical and Biological Engineering Building
CIVL '49	September 11, 2007	Lunch at Dunsmuir Lodge and a tour of the B.C. Aviation Museum in Victoria
MECH '87	July 14-15, 2007	Boat cruise Saturday evening, followed by a family barbecue on Sunday

Complete details on these events will be sent to the respective classes in the coming months. If you would like to get involved or have any questions, please contact us by phone at 604.822.9454 or by e-mail at alumni@apsc.ubc.ca.

Basil Peters invests in people

Passion for mentoring began at UBC

Basil Peters (EECE '77, PhD '82) developed some of the most important relationships of his career and found his passion for entrepreneurship during his engineering studies at UBC.

While he has been busy founding, financing, mentoring and selling technology companies for over two decades, he has made time to stay in touch with many of his former classmates along the way.

"Collaborating and networking with peers means a lot to me—after all that is how I met my first business partner Peter van der Gracht in first-year engineering," explains Peters. As graduate students they founded Nexus Engineering and together grew it into seven companies with international operations, one of which became the world's second largest manufacturer of cable television headends.

Demonstrating his desire to work collectively, Peters participated in numerous projects and teams at UBC. "Leading over 50 students in the 1974 Electric Vehicle Project taught me how to design and build prototypes and, equally important, how to manage teams of people," he says. These are skills that have since earned him tremendous success in his entrepreneurial career.

"Mentorship is also important to me; I credit much of my early success to my many great mentors," he acknowledges. "I am grateful for the invaluable lessons they taught me."

An accomplished entrepreneur, he has an outstanding list of accolades to his credit, including being named 1991's Entrepreneur of the Year by *BC Business Magazine* and a Silver Medal in Entrepreneurship

from Canada's Awards for Business Excellence.

Today Peters is giving back to young entrepreneurs. He is currently Board Chairman of Parasun Technologies and Backbone Systems. For the past 10 years, he has been an active angel investor in early-stage technology companies. However, he has since turned to supporting start-ups through such fund initiatives as the BC Advantage Funds.

"I remain committed to angel investing and mentoring," says Peters. Indeed, he is CEO and Portfolio Manager of the angel fund Fundamental Technologies II; he writes a blog on best practices for angel investors and entrepreneurs at AngelBlog.net; and he is a regular contributor to the *Angel Journal*.

"I appreciate the formal engineering education



I received at UBC as well as the successful career I have enjoyed as an entrepreneur within the technology community," says Peters. He goes on to acknowledge UBC as the genesis of some of the province's most successful knowledge-based companies, such as QLT, Creo, MDA—and, of course, Nexus!

He concludes with these words of wisdom: "With the belief that our province's greatest resource is the intelligence of our people, I encourage today's engineering students to consider opportunities to create and build companies from the knowledge and relationships they are building at UBC—it worked for me!"

Clean Energy Research Centre opens

Sustainable energy sources the impetus

The new multi-disciplinary Clean Energy Research Centre (CERC) officially opened November 1, 2006, dedicated to improving existing energy technologies and developing sustainable sources of energy.

At the opening ceremony, UBC President Stephen Toope said that the centre embodies the very heart of UBC's *Trek 2010* mission of sustainability and global citizenship. He added, "This initiative demonstrates the role universities must play in finding solutions to critical issues such as climate change and declining oil reserves."

More than 125 donors, government officials, industry partners, alumni, faculty members, students and staff attended the event held in the Chemical and Biological Engineering Building.

University Marshal Nancy Hermiston led the speakers into the Lecture Hall at the start of the 9:00 a.m. ceremony. Robert Evans, the centre's director and Methanex Professor in Clean Energy Research, acted as Master of Ceremonies.

CEO and President of the Canada Foundation for Innovation Eliot Phillipson spoke on behalf of the foundation, which encourages leading-edge research in Canada and provided \$3.6 million towards the centre.

Ken Armour, Director of the Research & Innovation Branch of the B.C. Ministry of Advanced Education, spoke on behalf of the Ministry, which contributed matching funds of \$3.6 million through the B.C. Knowledge Development Fund.

Dean Michael Isaacson thanked these contributors and others—Western Economic Diversification Canada, Stewart Blusson, the George Wilson Estate, the Suncor Energy Foundation, and Westport Innovations—for the support they provided to make the centre a reality. He also thanked Michael Macdonald, Senior Vice President of Technology & Corporate Development at the Methanex Corporation, for the support of Methanex in creating the first professorship for the centre.

"We are exceptionally pleased to have this new facility," said Isaacson. "It represents for us not just new laboratory space, but also a means to further our pursuit of research and educational excellence. It brings researchers and graduate students together from a wide range of engineering disciplines and various fields of study."

The dean noted the hard work, inspiration and vision of many UBC faculty and staff, in particular, Evans, Chemical and Biological Engineering Professor John Grace, many members of the President's Office, and those in UBC Properties Trust, among other UBC departments, for the creation of the facility.

The final speaker at the event was graduate student James Saunders, who expressed the tremendous benefits this centre would bring to students.

Research at the centre includes investigations of clean burning engines, fuel cells systems, process emission reductions, and new energy sources, such as hydrogen and biofuels.

The facility provides UBC engineers with the state-of-the-art tools and equipment necessary for leading-edge research to benefit all Canadians and, ultimately, citizens of the world.

Right: Centre Director Bob Evans was pleased to invite UBC President Stephen Toope to tour the centre following the opening.

Below: Dignitaries at the opening (from left): Phillipson, Armour, Toope, Isaacson, Macdonald, and Saunders.



Traci Jang



Traci Jang

Acknowledging research excellence

Newest chairs and professorships in Applied Science

Our growing number of research chairs and professorships signify the high calibre of research activities in Applied Science. Industry and government award these prestigious appointments to individuals in whom they have the utmost confidence. Their mandate in all cases is to advance the frontier of knowledge within their field, in areas identified as being of critical concern to industry or society. Here are the most recent of our research stars to be acknowledged in this way.

Canada Research Chair in Advanced Fibrous Materials: Materials Engineering Professor Frank Ko

Ko is an expert in nanoscale fibres—the fundamental building blocks of living systems. He will synthesize and test various nanofibrous materials that can be used in applications ranging from biomedical implants to fuel cells. Ko is also the recipient of support in this research from the Canada Foundation for Innovation.



Alcan Chair in Advanced Process Engineering: Materials Engineering Associate Professor Mary Wells

Wells seeks to improve the quality of aluminum by generating knowledge about the manufacturing process and ways in which it is influencing the properties of the product. Her research activities help give UBC national and international leadership in this area, and her research results inform lectures, design projects and case studies.



Charles A. Laszlo Professor in Biomedical Engineering: Electrical and Computer Engineering Professor Tim Salcudean

Salcudean will apply engineering principles and design to complex health-related issues. His research includes engineering screening systems for deep vein thrombosis and prostate therapies. The Biomedical Engineering Program is dedicated to developing the graduates and ensuring the research that will meet the needs of B.C.'s biomedical industry.



Robert E. Hallbauer Chair in Mining and Sustainability: Mining Engineering Professor Malcolm Scoble

The chair is intended to enhance teaching and research activities in the areas of social and environmental responsibility at the Norman B. Keevil Institute of Mining Engineering at UBC. As chair, Scoble will target these and other issues associated with globalization, aboriginal peoples, sustainable development and mine communities.



CRC Renewals

The federally-funded \$900 million Canada Research Chairs (CRC) program aims to build our country's research capacity through the attraction and retention of top researchers by Canadian universities.

Since its launch in 2000, a total of 14 of our faculty members have received either a Tier 1 or Tier 2 chair. Tier 1 chairs are appointed for seven years and Tier 2 chairs for five, after which a renewal process is initiated.

Kudos to the first of our professors to succeed in having their chairs renewed:

Mechanical Engineering

Professor Tom Oxland

Tier 2 CRC in Spinal Biomechanics
(July 1, 2006 to June 30, 2011)

Mechanical Engineering

Assoc. Professor Steven Rogak

Tier 2 CRC in Clean Energy Systems
(July 1, 2006 to June 30, 2011)

Materials Engineering

Assistant Professor Rizhi Wang

Tier 2 CRC in Biomaterials
(January 1, 2007 to December 31, 2011)

Centre adds value to student education

Communication, ethics, and global awareness—important for engineers

In a global workforce and diverse society, engineers must communicate effectively, understand the social and environmental impact of their engineering solutions, have an awareness of their professional and ethical responsibility and work effectively on multidisciplinary teams.

This is in addition to their technical qualifications in analytical modeling, design and professional decision-making.

To this end, and to fulfill the needs of industry, the Centre for Professional Skills Development has evolved from its previous, more basic form as the Technical Communication Centre, so as to include credit and non-credit courses, workshops and seminars on professional and academic skills development.

Some areas of training include project management, consensus building, intellectual property rights and media relations, as well as presentation and marking skills for teaching assistants.

At the formal opening of the centre on September 30, 2006, Dean Michael Isaacson welcomed the industry representatives, donors, alumni and internal university partners in attendance. “The new centre plays an important role in encouraging a broader set of professional competencies, essential for engineers today,” he said. “We must respond to the needs of the profession and society.”

In addition to the various areas of training, the centre has offered first-year orientation sessions that cover areas such as essential learning skills, academic integrity, and critical thinking.

To further expand student horizons, a tri-mentoring program connects an engineer mentor from industry or academia to a senior and a junior student, for students to gain an early insight

into the world of engineering. This unique structure also allows the senior student to mentor the junior, while gaining leadership skills. Mentors have the unique opportunity not only to network with enterprising students entering their profession, but fellow professionals as well.

In another initiative, the proposed Dean’s Award for Advanced Professional Development is intended to provide incentives to and give recognition for the added value of co-curricula activities that complement academic learning.

Students self-select to be considered for this award. Activities may include leadership or participation in team projects or student clubs, for which centre staff also offer support. The Western Engineering Competition (see page 4) and the UBC Supermileage team (see page 16) are examples of the types of activities that represent expenditure of considerable time, effort and dedication on the part of students, all enhancing their academic coursework.

The centre builds connections in the community and to other disciplines to further broaden student experience.

One such example was the Reading Week project at Tillicum Elementary School in East Vancouver in February. Fifteen volunteer engineering students joined 15 students in Biology 121, who were fulfilling the Community Learning Initiative section of their course, to create hands-on activities in science and mathematics for 120 students in Grades K-4.

UBC Engineering Student Development Officer Amy Vozel and UBC Science International Student Coordinator Susan Peters worked with the school’s vice principal to coordinate the week’s activities.

In a variety of ways, the centre creates a supportive environment to link students to resources and services that help prepare them for an engineering career.

For more information about the centre, visit: www.cpsd.apsc.ubc.ca.



Centre team members (from left):
Web Developer/Program Assistant Bryan Li, Instructors Annette Berndt and Ruth Derksen, Senior Instructor Emerita Donna Shultz, Dean Isaacson, Centre Director Tatiana Teslenko, Sessional Lecturer Michael Schoen, Student Development Officer Amy Vozel, Associate Dean of Engineering Programs Bruce Dunwoody, and Sessional Lecturer Jane Pavelich.

In memoriam

Ian Gartshore (1935–2006)

A superb teacher and mentor, an exceptionally talented researcher and engineer, and an excellent university administrator passed away October 2006.

Professor Emeritus Ian Gartshore left innumerable friends and colleagues at the Faculty of Applied Science and elsewhere, and hundreds of former students, all with vivid memories of a warm and positive advisor, a scholar and a gentleman.

A faculty member in the Department of Mechanical Engineering for over 30 years, Dr. Gartshore graduated from UBC with a Bachelor of Applied Science degree and went on to an advanced degree in

engineering from Imperial College London and a doctorate from McGill.

He was instrumental in building the world-class wind tunnel facilities that the department benefits from to this day, and he maintained an active research, teaching and consulting interest in fluid mechanics until fall 2006. He was a statesman in his former administrative roles that included Assistant Head as well as Acting Head for the department and Associate Dean for the Faculty.

Formally retired since 2000, Dr. Gartshore taught mechanical engineering over the years to thousands of students and supervised

many graduate students in their advanced studies. He was an international visiting lecturer, a key conference participant and an active member of scholarly societies, as well as a consultant to industry through the UBC spin-off company Process Simulations Limited.

He published extensively in the area of fluid mechanics with a focus on turbulence shear flows. His research on mathematical modeling of industrial processes, with emphasis on the pulp and paper sector, has been successfully applied worldwide.

A consummate family man, Dr. Gartshore inspired many with his sensitivity



for others, his deep understanding and wide reading of psychology and philosophy, and his ability to combine compassion for people with excellence in his work.

Appointments

Chemical and Biological Engineering

Gopaluni Bhushan was appointed Assistant Professor on August 1. His research interests are in system identification, fault detection and diagnosis, iterative control, and identification.

Electrical and Computer Engineering

Sathish Gopalakrishnan was appointed Assistant Professor on January 1. His current research focus is on real-time and distributed systems, sensor networks, QoS optimization, and reconfigurable systems.

Shuo Tang was appointed Assistant Professor on January 1. Her research spans biomedical optics, optical coherence tomography, multiphoton microscopy, in vivo imaging, endoscopy, and early cancer detection.

Materials Engineering

Frank Ko was appointed Professor and Director of AMPEL on January 1. Tier 1 Canada Research Chair in Advanced Fibrous Materials, he is an expert in nanofibre technology, advanced fibrous structures, biomaterials, and nanocomposites.

Norman B. Keevil Institute of Mining Engineering

Michael Hitch was appointed Assistant Professor on January 1. His expertise is in mining sustainability, and mining design from the project feasibility stage.

UBC Okanagan School of Engineering

Sheng Samuel Li was appointed Instructor on December 1. His teaching and research interests focus on developing computational methods for hydraulic engineering and fluid mechanics problems, particularly related to sediment transport and turbulent mixing.

Vladan Prodanovic was appointed Instructor on January 1. His teaching and research are in the area of thermofluids, in particular heat transfer with phase change, such as boiling and condensation, and its application in material processing.

Achievements

Electrical and Computer Engineering Associate Professor **Robert Schober** has received the UBC Killam Research Prize.

Electrical and Computer Engineering Professor **Tim Salcudean** has been appointed the Charles A. Laszlo Professor in Biomedical Engineering.

Materials Engineering Professor and Department Head **Steven Cockcroft** and Assistant Professor **Daan Maijer** have received (along with co-authors J.D. Zhu and B. Zhang) the Best Paper Award from the Metallurgical Society of the Canadian Institute of Mining, Metallurgy and Petroleum for their paper "Simulation of Microporosity Formation in A356 Aluminum Alloy Casting: The Role of Hydrogen Transport."

Materials Engineering Professor **Frank Ko** has been appointed a Tier 1 Canada Research Chair in Advanced Fibrous Materials.

Materials Engineering Assistant Professor **Rizhi Wang's** Tier 2 Canada Research Chair in Biomaterials has been renewed for an additional five years.

Materials Engineering Associate Professor **Mary Wells** has been appointed the Alcan Chair in Advanced Process Engineering.

Mechanical Engineering Professor **Tom Oxland's** Tier 2 Canada Research Chair in Spinal Biomechanics has been renewed for an additional five years.

Mechanical Engineering Professor and Department Head **Nimal Rajapakse** has been appointed Director of the Institute for Computing, Information and Cognitive Systems effective July 1, 2007.

Mechanical Engineering Associate Professor **Steven Rogak's** Tier 2 Canada Research Chair in Clean Energy Systems has been renewed for an additional five years.

Mining Engineering Professor and Director of the Norman B. Keevil Institute of Mining Engineering **Malcolm Scoble** has been appointed the Robert E. Hallbauer Chair in Mining and Sustainability.

Students make *Time*

UBC Supermileage vehicle "Best Invention in 2006"

TIME Magazine has selected a vehicle designed and built by UBC Mechanical Engineering students as one of the top inventions for 2006.

With an ultra-fuel-efficient 54 c.c. engine, the students' 80-pound, carbon-fibre vehicle won the Society of Automotive Engineers' Supermileage Competition, besting

40 teams from Canada, the U.S. and India.

Led by Kevin Li and Jonathan Yeung, the 2006 UBC Supermileage team successfully defended UBC's title for a fourth consecutive year. This time, they set a course record of 3,145 mpg and beat their closest rival by over 1,300 mpg.

"The challenge was more than fuel efficiency for us," said Li. "It was

about perseverance and teamwork. I think that will be what I take with me into the workforce."

The team's success continues to be featured in media across Canada, and in the U.S., Hong Kong, Japan and Germany—most recently on the Knowledge Network's *The Leading Edge* in February.

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The Faculty's engineering activities include the following:

Departments, Schools and Programs

- Biomedical Engineering
- Chemical and Biological Engineering
- Civil Engineering
- Electrical and Computer Engineering
- Engineering Physics
- Environmental Engineering
- Geological Engineering
- Integrated Engineering
- Materials Engineering
- Mechanical Engineering
- Norman B. Keevil Institute of Mining Engineering
- UBC Okanagan School of Engineering

Office of the Dean

- Business & Development Office
- Centre for Instructional Support
- Centre for Professional Skills Development
- Engineering Co-op Office
- Engineering Student Services

The Faculty participates in several research centres and laboratories including:

- Advanced Materials and Process Engineering Laboratory (AMPEL)
- Clean Energy Research Centre (CERC)
- Institute for Computing, Information and Cognitive Systems (ICICS)
- Michael Smith Laboratories
- NUS-UBC Applied Science Research Centre
- Pulp and Paper Centre

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