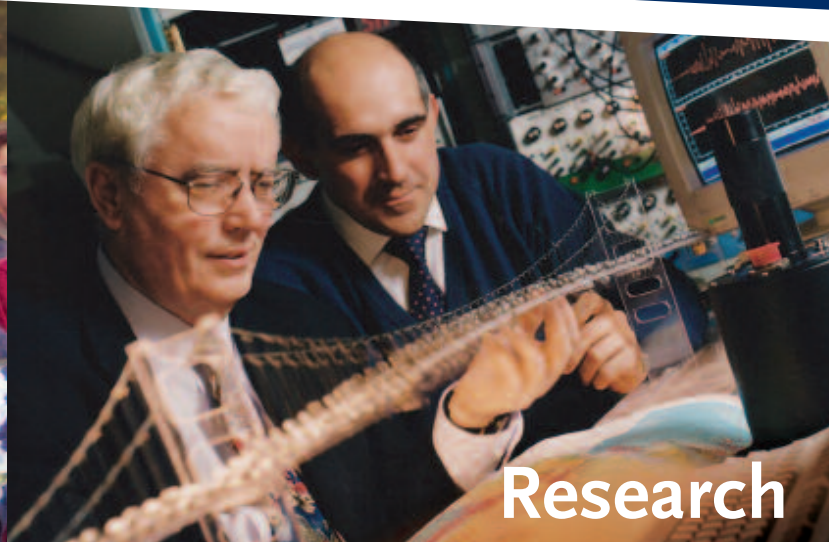


spring/summer 2008

# ingenuity

Faculty of Applied Science  
Engineering News



Celebrating **10** years

# Message from the Dean



Welcome to the spring 2008 issue of *Ingenuity*. As you may be aware, I will be stepping down as Dean this summer, after serving in this role for 11 years. It has been an enormous privilege to serve as UBC's tenth Dean of Applied Science, and I am very proud to have seen major accomplishments of our Faculty during my tenure.

We have witnessed major growth in student enrolments in response to the needs of British Columbia and Canada. A number of exciting new programs have been developed including the BASc in Integrated Engineering; the BASc in Environmental Engineering (with the University of Northern B.C.); the Commerce and IT Minors in all BASc programs; and the Biomedical Engineering Initiative, which includes masters and doctoral degrees and two undergraduate options. The School of Engineering at UBC Okanagan was established and now offers undergraduate and graduate programs in civil, electrical and mechanical engineering. There have been major enhancements in the quality of the education we provide—in the development of relevant curricula and in improved levels of student support, emphasizing business and communication skills, engineering design and project-based learning.

Our faculty complement has expanded significantly by our recruiting the very best. Leading-edge research contributions have been assured by providing faculty with the most supportive environment possible. Our faculty have generated dozens of success stories.

In order to assure these various accomplishments, we have been able to increase significantly our infrastructure and resource base. Over the past 11 years, over \$100 million in capital projects have been completed; we have secured in excess of \$100 million

through our fundraising efforts; and our Faculty's endowment has increased from \$8 million to over \$50 million.

I am overwhelmed and humbled by the various expressions of appreciation I have received over the last few months—thank you so much! But the truth is that all these accomplishments—in education, research and resource development—have only been possible through the dedication, engagement and support of a large and complex community of students, faculty, staff, alumni, industry partners, donors, advisors and friends. I want to extend my deepest appreciation to all of you who have supported Applied Science over the past 11 years and thank you for believing so strongly in the value of our engineering programs.

I have very much enjoyed being a part of such a wonderful community and interacting personally with so many of you. I plan to take an administrative leave this fall, while continuing as Professor of Civil Engineering at UBC—now shifting my focus to research, teaching and consulting. Please welcome the new Dean of Applied Science warmly and continue your support of the Faculty of Applied Science. Thank you again and farewell.

A handwritten signature in black ink that reads "Michael Isaacson". The signature is written in a cursive style and is positioned above a thin horizontal line.

**Michael Isaacson**

Dean

To view past issues of *Ingenuity* and learn more about the Faculty, visit our website at <http://www.engineering.ubc.ca/publications>.

## Message from the Editor...

Welcome to the 10th Anniversary Edition of *Ingenuity*. Since our first issue in spring of 1998, much has changed globally, nationally and locally. In order for the Faculty of Applied Science to achieve its mission—providing students with an outstanding and innovative education and conducting leading-edge research that serves the people of British Columbia, Canada and the world—Applied Science has dynamically responded to society's needs.

To set the stage for this special edition, in 1998 El Niño struck North America, resulting in widespread power failures, severe forest damage, and multiple deaths; Canada's first diamond mine opened in the Northwest Territories; and 8,000 people were evacuated as forest fires threatened Salmon Arm, B.C. And closest to home, the Faculty followed new directions under the recently appointed tenth Dean of Applied Science, Michael Isaacson.

Although perhaps not obvious at the time, the impact of each of these events has rippled into Applied Science through its education and research programs. In this issue of *Ingenuity*, the last of Dean Isaacson's term, we take a glimpse at UBC Engineering a decade ago, and review advancements in leadership, research, education and infrastructure. In addition, friends and colleagues of Dean Isaacson have sent notes acknowledging the Faculty's accomplishments under his leadership, which are featured in sidebars throughout this issue.—**ErinRose Handy**

**Cover:** Photo highlights of the last ten years—Engineering students presented the Queen with a "Red" cardigan upon her visit in fall 2002; Professors Liam Finn and Carlos Ventura were the first researchers featured in *Ingenuity*, spring 1998; a double rainbow graced the new Chemical and Biological Engineering Building in 2006; and Dean Isaacson, steward throughout all these events.

# Engineering Strategy

## Q & A with Dean Isaacson: Leadership—A Decade in Review

*Ingenuity* regularly features its leadership profile on this page. Over the years, we've profiled Engineering Department Heads, Associate Deans and Program Directors, gleaning key elements of their leadership style, focus and strategy. With this issue of *Ingenuity*—the last one of Dean Isaacson's term—we are pleased to take this opportunity to highlight his own leadership strategy.

**On this special occasion of *Ingenuity's* 10th Anniversary, could you reflect on the purpose of the publication?**

When I became Dean, one of my high priorities for the Faculty was to enhance its relationships with a range of its external communities— alumni, industry representatives and many others— and one vehicle for doing so was the establishment of a newsletter for the Faculty.

*Ingenuity* has provided a strong focus on outreach for alumni relations and advocacy for the Faculty as well as the engineering profession, while profiling Applied Science's various activities and facilitating outreach with our external stakeholders.

**Has the publication met your goal?**

It has met this goal in spades. I have been delighted with its professional look, the diversity of its content and the very positive feedback that we've received so

many times. It has been instrumental in achieving one of my key objectives— promoting the Faculty of Applied Science and advocacy for it, both within the university and externally to all our stakeholders.

**What other tactics have you employed for outreach?**

The Faculty's strategic plan identified "enhancing relationships and linkages" as one of five overarching goals. Outreach activities developed to achieve this goal include *Ingenuity*; very close relationships with industry through the creation of the Engineering Advisory Council and advisory councils for every department; growth of the Engineering Co-op Program; and alumni events and reunions hosted in Vancouver, across Canada and in the U.S.

**Under your leadership *Ingenuity* has helped raise the profile of Applied Science**

**across campus. In addition to the newsletter, how else have you helped promote the Faculty campuswide?**

I've been very mindful of the need to be actively engaged across the university in a variety of ways—not only myself, but also my many colleagues—partly as a vehicle for promoting engineering and partly to assist the university as a whole to thrive and develop. We've done this in many ways, for example, through myself or other members of the Faculty serving on or chairing major committees across the campus.

As well, I have helped establish the UBC Okanagan Senate and the Council of Senates, chaired a number of Senate Committees, and served as Special Advisor to the Deputy Vice-Chancellor, UBC Okanagan with respect to such areas as academic planning, capital planning, budgeting and governance, all with a view to helping

enhance the university and its operation.

Another recent example was a committee to establish the Graduate Support Initiative. In so doing, I think we helped shape this particular initiative, which will be of great benefit to the university in terms of providing support for graduate students in a rational and beneficial manner.

I am delighted that we have had the opportunity to help shape many such initiatives over the years.

**Would you say that engineers are particularly well-suited to serve in this type of advisory role?**

Yes, very well suited— I think that a background in engineering teaches people how to focus on setting clear objectives and achieving them in a rational, systematic, effective and efficient way. Engineers make things happen!

[\(Continued next page\)](#)



## Strategy... con't from p.3

### What do you consider the greatest challenge of your term?

I would say there have been two. First, despite all our efforts towards advocacy, it has been a challenge to have the university recognize the distinct and professional nature of engineering and its unique culture. We've had some successes but gains still need to be made.

Second, although the establishment of the School of Engineering at UBC Okanagan represents one of our greatest accomplishments, it also remains one of our greatest challenges. We worked very hard to establish the School from scratch and have made a strong start. But the School is still in its infancy and needs all the support and nurturing possible until its programs have been fully accredited.

### What do you consider your greatest accomplishments as Dean?

Certainly helping with the establishment of UBC Okanagan and the School of Engineering—but also the growth of the Faculty overall in terms of students and faculty members. As well, a shift in the curriculum towards project-based learning and integrating business and communication skills, and a broader skill set has been important. And by helping to raise the extent and profile of research by providing support to faculty members to the greatest degree possible and developing the resource base and infrastructure to support growth and research enhancements has been a major accomplishment.

### How do you see Applied Science positioned for the future?

Superbly well—we have a phenomenal faculty complement of 190 faculty members who are absolutely world-class and are the key to ensuring that the Faculty thrives and excels in a number of ways.

I am proud that Applied Science has a reputation across campus for being run very well with support systems and approaches in place to allow it to thrive and advance in the future.

Thus, I've expanded the Dean's Office quite significantly through human resource support, financial management, grant writing, communications and fundraising. Although all this activity is housed in the

Dean's Office, much of it supports the departments directly and allows the Faculty as a whole to thrive.

### Do you have any words of advice for the incoming Engineering Department Heads?

My primary advice would be to focus on stakeholder relationships—including faculty, students, staff and external partners. And always to support faculty members to the greatest extent possible since this will ensure the quality and success of our programs—both in teaching and in research.

Much can be achieved with a good attitude, the solicitation of advice and perseverance.

### Do you have any parting words for our Ingenuity readers?

It's been an enormous privilege to serve as Dean for the last 11 years. I'm humbled by the many expressions of support and appreciation that I've received from a wide range of stakeholders—industry, donors, alumni, students, faculty members, UBC colleagues and many others involved with Applied Science.

The Faculty's accomplishments have only been possible through a team effort by faculty members, Applied Science leadership, staff, students, alumni, external partners and advisory committees. There are many ways that all these stakeholders have been advocates for the Faculty. I am very grateful.

## Leadership: Thanks to Dean Isaacson

*Dr. Michael Isaacson has been a true scholar, visionary, pioneer and master networker during his tenure at UBC. In his position as Dean of the Faculty of Applied Science he has built a bridge between academia, industry and society by setting up numerous innovations such as the Faculty's Advisory Council which I have had the privilege of being involved with. He has elevated engineering at UBC by providing visionary leadership, expanding key programs, recruiting first-class professors and almost doubling attendance. He has worked tirelessly at improving the infrastructure, working with all segments of a modern society to provide funding to improve the research labs, test equipment and expanding the engineering complex....*

**Fred Kaiser,**  
Chairman,  
Alpha Technology

*Michael Isaacson's tenure as Dean of the Faculty of Applied Science was truly remarkable. He oversaw a time of great growth in the Faculty in terms of curriculum reform, faculty recruitment, student programs, research innovation, community outreach, extraordinary fund raising and of course, capital expansion. While all of these accomplishments deserve recognition and praise, Michael also needs to be acknowledged for the key contributions he made to the university community—his participation in numerous committees, including the Senate, and the instrumental role he played in the establishment of UBC Okanagan. In short, the Faculty of Applied Science and The University of British Columbia have benefited enormously from Dean Isaacson's leadership and for that we owe him a huge debt of gratitude....*

**Martha Piper**  
Former President and Vice-Chancellor,  
UBC

# Engineering Research

## A Decade in Review

Ten years ago the first edition of *Ingenuity* highlighted the research of Civil Engineering Professors Carlos Ventura and Liam Finn focusing on B.C.'s earthquake damage potential.

Over the years the two have continued their seismic-risk investigation. Their results have recently been incorporated in a novel methodology to enhance the resiliency of critical infrastructures by using a simulation of multiple layers—roads, bridges, houses, schools and hospitals—to depict the interdependencies that contribute to earthquake-risk assessment.

Through the Earthquake Engineering Research Facility, their seminal research has expanded in scope and volume culminating in a multimillion dollar contract from the Ministry of Education to develop cost-effective methods for the seismic retrofit of B.C. schools and to provide guidelines for engineers designing retrofits.

Although undeniably grand in its magnitude, the success of Ventura and Finn is not aberrant within Applied Science rather, it is one of the myriad examples of the Faculty's outstanding research.

Within each of the engineering departments and the School of Engineering at UBC Okanagan exist dozens of research success stories. As well, the Faculty promotes interdisciplinary investigations focusing



From top left: 1. NRC-IFCI Director General Maja Veljkovic celebrates the renewal of the fuel cell research partnership between NRC and UBC Applied Science with Professors Walter Mérida, Kevin Smith and David Wilkinson. 2. A fuel cell car. 3. Advanced Education Assistant Deputy Minister Brent Sauder commends Lars Rose (MTRL PhD student and NRC-IFCI researcher) on helping to promote fuel cell research.



on highly relevant themes such as environmental sustainability, the high-tech sector and improved quality of life.

Promoting research since the beginning of his term, Dean Isaacson developed a strategy to recruit the best faculty and provide them with the most supportive environment possible. He has helped grow the engineering faculty complement to 190, and has demonstrated support through new facilities and infrastructure, increased salaries, mentoring and career development, increased administrative staff and enhancements to the intellectual property climate.

A faculty member at UBC for nearly 35 years, Associate Dean Faculty and Research Don Mavinic notes a significant increase in both Applied Science research and entrepreneurship over the last ten years.

“The Faculty has shifted gears and has become a big-time player in technology transfer and spin-off enterprises,” says Mavinic. Citing his own situation, it is a welcome change.

In conjunction with UBC's University Industry Liaison Office, Applied Science successfully brought to market a unique phosphorus-recovery-from-wastewater technology developed in Mavinic's Civil Engineering laboratory. Ostara Nutrient Recovery Technologies Inc., licensed to market and sell the phosphorus-recovery technology abroad, employs several UBC Engineering graduates.

During the past decade, Applied Science has established over 33 named research chairs and professorships and several research centres and initiatives, including the Earthquake Engineering Research Facility and the Clean Energy Research Centre.

Applied Science has received over \$50 million in Canada Foundation for Innovation/British Columbia Knowledge Development Funds (including matching funds) and attracts approximately \$25 million per year in research funding.

The Faculty collaborates with many UBC partners, as well as government and industry partners, to provide the most relevant and necessary research in a timely and cost-effective manner.

Recently Applied Science celebrated two such partnerships by signing Memoranda of Understanding (MOUs)—one with the National Research Council of Canada Institute for Fuel Cell Innovation (NRC-IFCI) and one with UBC's Faculty of Forestry and FPInnovations (the amalgamation of Paprican, Forintek, FERIC and the Fibre Centre of the Canadian Forest Service).

(Continued p.12)

# Faculty development A Decade in Review

I have very much enjoyed being a part of the Development team with Michael Isaacson. It has been a great challenge to help UBC Engineering realize its goals for students, faculty and resources, but also a great pleasure to work with our many creative and passionate donors who have so generously supported Applied Science. Together we have had phenomenal success with our initiatives—the Faculty has raised over \$100 million over the past 11 years—and we could not have done that without your help. Thank you!

In this, Michael's last issue of *Ingenuity* as Dean, we have profiled

for you a few of the most recent fundraising projects under his leadership—the new Wayne and William White Engineering Design Centre and the renewal of one of our oldest and most successful research chairs—the Chair in Hydrometallurgy in Materials Engineering.

I am also very pleased to highlight for you gifts honouring Michael's work as Dean—those supporters who made a gift in his final year and those who made a gift in his honour to the Wayne and William White Engineering Design Centre. Members of the Engineering Advisory Council made lead gifts dedicating a room in Michael's honour to commemorate his term as Dean, and we are pleased

to announce that \$300,000 has been raised in his name. It is very fitting that Michael will be honoured in this new building that he has championed for the past ten years.

As well, Dr. Charles Laszlo also worked closely with the Faculty to increase the endowment for the Charles A. Laszlo Professorship in Biomedical Engineering so as to transform it to a Chair.

Thank you very much again to all our donors, alumni, industry partners and friends who have offered their support, advocacy and advice. With your assistance, we are well prepared to meet the challenges of engineering in the coming years. We will continue our



work to support the Faculty under the new Dean, and we look forward to continuing our relationships with all of you as well.

For more information on getting involved with one of UBC Engineering priorities, please phone us at 604-822-8335 or visit our website at [www.apsc.ubc.ca](http://www.apsc.ubc.ca). We look forward to hearing from you.

**Hillary Gosselin**  
Director of Development

## The Way Ahead in Review

When Dean Isaacson began his term, it was clear that the Faculty had great potential for growth; however reaching its potential would require additional resources. Thus, *The Way Ahead* fundraising campaign was launched and has played an important role in Applied Science's many changes and achievements.

Over the past year, Dean Isaacson and the Applied Science Development Office have worked hard to ensure



that many of the campaign's priorities have been realized.

On April 28th, Applied Science hosted a gala event to formally close *The Way Ahead* and thank all those community members—industry partners, advisory council members, donors and friends of Applied Science—whose support has been instrumental to the Faculty's success.

President Toope announced the \$100 million fundraising achievement and thanked the community, especially those who came forward to help close the campaign this past year.

"I am truly honoured by the support of the larger engineering community," Dean Isaacson said. "The opportunity to work alongside the leaders of our industries, to ensure that our programs continue to make a real contribution to the community at large, and to have been a part of the evolution of engineering, has been truly amazing. Thank you to all of our industry and community partners."

**Engineering Gala—celebrating the success of *The Way Ahead*.**  
From left: George and Martha Salcudean, Art Hister and Phyllis Simon, Sharon and Michael Isaacson, Jordanna Isaacson and Rye Schroeder.

# 20 Years and Going Strong:

## The Industrial Research Chair in Hydrometallurgy

More than 20 years after its creation, the Industrial Research Chair in Hydro-metallurgy in the Materials Engineering department has received an infusion of financial support.

Originally funded in 1988 by nine industry partners pledging a total of \$225,000 over five years, the Chair was established to support hydrometallurgy worldwide, not only through research but also through teaching and community service.

Industry partners have provided continuous support for the Chair through successive five-year funding rounds. During the 2002–07 funding round and thanks to the efforts of Dean Michael Isaacson and Materials Engineering Head Steve Cockcroft, UBC provided \$1.25 million in matching funds to establish the Chair as an endowed chair.

The establishment of an endowment and increasing support from industry will bring total support to \$3.1 million by 2012, enabling the Chair to grow.

The original Chair supported two faculty and this has now been

expanded to include a third faculty member.

Professor David Dreisinger, the current Hydrometallurgy Senior Chairholder, succeeded Professor Ernest Peters, the original Chairholder who retired in 1991. The Chair in Hydrometallurgy team now consists of Dreisinger, Associate Chairholder Professor David Dixon, Assistant Professor Edouard Asselin, and several researchers.

When asked about the importance and evolution of the Chair, Dreisinger indicates numerous benefits to industry. Together with Professor Dixon, he provides short courses to industry partners each year; the Chairholders train undergraduate and graduate students in hydrometallurgical principles and research; and industry partners are able to access the new research and take advantage of early technology transfer.

Particularly proud of the short courses—over the past two decades, the Chair team has developed more than 20 courses taught in excess of 300 times—Dreisinger says

they are a great value to industry partners:

“The industry is growing and changing. Growth, combined with a lack of skilled professionals, means that our ability to come to their operations and train employees in the newest research is an enormous benefit. It helps companies compete.”

Research is also key. Recently Dixon and one of his PhD students, Alain Tshilombo, developed a revolutionary new hydro-metallurgical process for copper. The Galvanox™ process is easier, cheaper and more environmentally friendly than either smelting or other hydrometallurgical processes; moreover, it can process ores in much lower concentrations than before. Chair supporter Bateman Engineering has recently been granted exclusive rights to market the new technology in certain countries worldwide.

Looking forward, Dreisinger sees innovative, collaborative research and strong industry ties continuing:

“The collaborative consortium has been crucial

to our research successes, and to the success of the Chair as a whole,” he says. “Our department and the Hydrometallurgy team have a strong partnership with industry, and I’m looking forward to continuing our work together.”

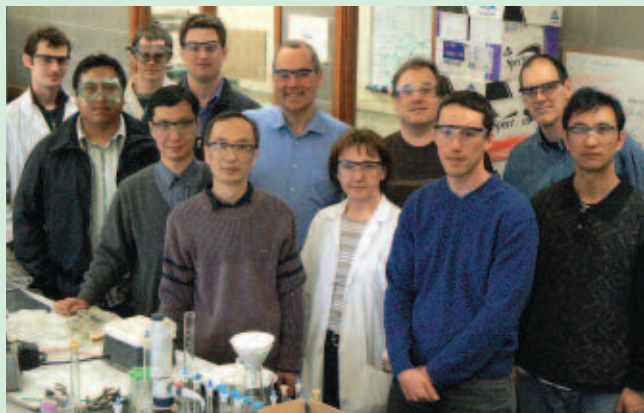
### Thanks to the following donors for renewed support of the Industrial Research Chair in Hydrometallurgy through 2012\*:

- Alcan Inc.
- Barrick Gold Corporation
- Bateman Engineering NV
- BHP Billiton–Stainless Steel Materials
- Cognis Corporation
- Companhia Vale do Rio Doce–CVRD
- CYTEC Industries Inc.
- Eichrom Industries Inc.
- Hatch Associates Limited
- Hudson Bay Mining and Smelting Co., Limited
- Inmet Mining Corporation
- Rio Tinto Limited
- Teck Cominco Ltd.
- Xstrata Canada Corporation

### And thanks to the following donors that have previously contributed to its success:

- AMEC Americas Ltd.
- Cominco Limited
- Falconbridge Limited
- Fluor Canada Ltd.
- Inco Limited
- Natural Resources Canada
- Noranda Inc.
- Placer Dome Inc.
- Praxair Canada Inc.
- Sherritt International Corporation
- Teck Corporation
- Tessengerlo Kerley, Inc.

\* Companies that have authorized recognition as of March 18, 2008.



The Industrial Research Chair in Hydrometallurgy team includes professors, post-doctoral fellows, research associates, instructors and graduate students. From left: Adam Fischmann, Berny Rivera-Vasquez, Patrick Littlejohn, Feng Xie, Professor Edouard Asselin, Jianming Lu, Professor and Chair David Dreisinger, Edith Czech, Professor David Dixon, Gordon Forbes, Berend Wassink and Libin Tong.

# The Wayne and William White Engineering Design Centre:

## Wayne and William White Engineering Design Centre Naming Opportunities:

The new \$6.6 million centre provides a wide range of naming opportunities that include:

Design Studio  
\$750,000

Student Workshop  
\$750,000

Atrium  
\$450,000

Project room(s)  
\$300,000

Seminar room(s)  
\$300,000

Meeting room(s)  
\$200,000

A donor wall—centrally located within the building—will honour all donors of \$25,000 or more who have helped advance this project.

UBC Supermileage Team prepares for the Shell Eco-marathon held in California, April 11–13, 2008.



Dean Isaacson has long envisioned creating a facility to house engineering design education, and now—thanks in part to a \$2.5 million gift from Engineering alumni Wayne and William White—the vision will become a reality.

The Wayne and William White Engineering Design Centre—a \$6.6 million centre purpose-built to support undergraduate student education across the engineering disciplines—most importantly will provide the spaces students need to pursue collaborative design work.

“I am so pleased that this project has, through the generosity of the White brothers, been able to move forward,” says Dean Isaacson. “I know this building will greatly enhance our ability to promote engineering design education for our students, and I am very pleased to get this started prior to stepping down.”

Twin brothers Wayne and William White both graduated from the Faculty



Wayne and William White exchange gifts with Dean Isaacson (centre) at the November 2007 Toronto alumni event.

of Applied Science in 1967. Wayne studied Metallurgy, and William studied Mechanical Engineering. Wayne works for Brant Securities. William continues his career as the Founder and President of IBK Capital Corp. (website: [www.ibkcapital.com](http://www.ibkcapital.com)), an investment banking firm specializing in the resource industry.

The Whites learned of the need for an engineering student design centre at one of Dean Isaacson’s Toronto alumni events in 2007 and decided to make their generous gift to help ensure the success of the building.

The Faculty is seeking partners for the multimillion dollar centre; several naming opportunities are still available (see left sidebar for details).

The White brothers’ value of giving back to the community is inspired

by Galatians 6:9 in the New Testament: “Let us not become weary in doing good, for at the proper time we will reap a harvest if we do not give up.”

It is their hope that their contribution will inspire other alumni and industry partners to make gifts to the building.

“As alumni, we recognize the great value of engineering education at UBC,” they said. “We wanted to encourage everyone else who benefited from their time at UBC to help make sure that today’s students have similar advantages, and that UBC Engineering maintains its high-quality education.”

Situated on East Mall, the building will house:

- *Engineering Design Studio.* The design studio space will enhance delivery of engineering design courses, project-based learning and students’ collaborative project work.

# The next addition to the UBC Engineering precinct

- **Project and Design Teaching Rooms.** The centre will contain several instructional spaces for project and design teaching, including a project room and a computer/reading room for design projects.
- **Professional Skills Development.** A small suite of offices will house faculty and staff supporting students' professional skills development. Activities that will be supported include mentorship programs, workshops, student competitions, student design projects, lecture series profiling industry leaders, and written and oral communications training.
- **Student Workshop.** The centre will have workshop facilities to support student-directed teams, competitions and related extracurricular activities.
- **Shared Meeting Rooms and Support.** To complement the above features and provide for a wide range of activities, the building will have an atrium, two small meeting rooms and general support functions.

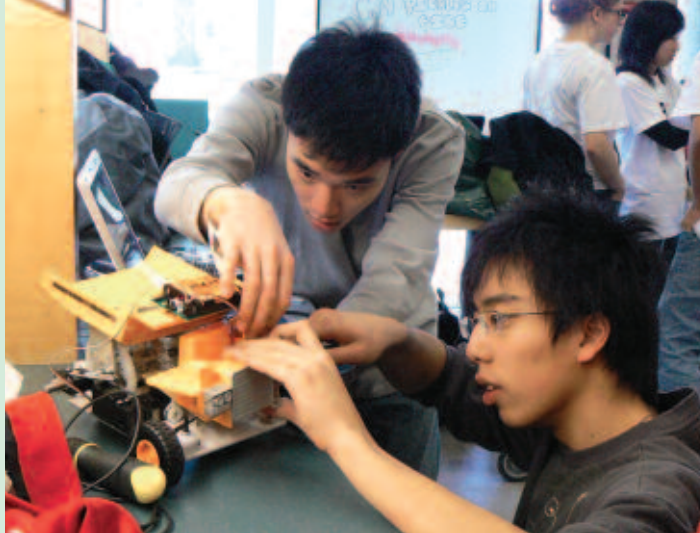
This new building will provide students with a place to put classroom learning into practice through hands-on practical design, and will also provide space and resources for students' extracurricular activities such as student teams or competitions (see sidebar).

"On behalf of all UBC engineering students, I would like to express gratitude to Wayne and William White as well as Dean Isaacson for their support and leadership in creating a dedicated facility to support co-curricular learning," says Parisa Bastani, Engineering Student Team Council Chair and Formula SAE Team Captain.

"The Engineering Design Centre will enable us to develop hands-on skills, while acquiring leadership and team skills to become well-rounded engineers."

With the facility open to students from across the engineering disciplines, students will have the opportunity to do cross-disciplinary collaboration for both classroom and student-team work.

Students gain not just practical design skills, but also project management, team-building



Mech 2 students prepare project for class competition.

and professional skills development opportunities that reflect industry reality—problem-based projects that are solved collaboratively by a range of experts. Together these many learning opportunities will assist students to become prepared, professionally and personally, for careers as engineers.

The Faculty of Applied Science would like to extend its sincere appreciation to the White brothers for their generous contribution to establish the Wayne and William White Engineering Design Centre. The centre will greatly enhance engineering education at UBC, and will help ensure that students today will have the skills they need as the engineers of tomorrow.

## Engineering Teams

Undergraduate engineering students participate on a variety of teams at UBC. Each team provides students with the opportunity to use their education in a constructive, hands-on design problem. Working towards their goal in a collaborative setting, the teams provide students with the means to learn business and communication skills necessary for careers as professional engineers.

Teams include:

- Concrete Toboggan
- Formula UBC
- Human-Powered Helicopter
- Human-Powered Submarine
- RoboYacht
- Snowstar Space Elevator
- Steel Bridge
- Thunderbots
- UBC Aero Design
- UBC Rocket Project
- UBC SAE Supermileage
- UBC Super Heavy Lift Aero Design
- UBC Thunderbird Robotics



Artist's rendering of the Wayne and William White Engineering Design Centre.

# Alumni update

## New Directions

Applied Science welcomes Tracey Charette as Manager of Alumni Relations. Originally from Calgary, Tracey attended the University of Calgary and completed her MBA in 2005. Having lived and worked in Korea, Taiwan, Germany and Switzerland, she brings a world of experience with her. Enthusiastic and dedicated, Tracey truly enjoys working with people and looks forward to connecting with many of you. Please phone 604-822-9454 or email [tracey.charette@ubc.ca](mailto:tracey.charette@ubc.ca) if you would like to start planning your class reunion or for information on alumni events.



**Tracey Charette**  
Alumni Relations Manager

## Event Highlights

### UBC Engineering in Toronto— November 29, 2007

Dean Isaacson hosted his last official alumni reception in Toronto as Dean and gave an update on Applied Science and the numerous achievements that have occurred during his term. The event's highlight was the announcement of a gift of \$2.5 million from alumni Wayne White (METL '67) and William White (MECH '67) to name the Wayne and William White Engineering Design Centre. The White brothers gave a presentation on investment opportunities in the solar-energy sector and spoke of the spirit of giving.

### Old Red New Red—February 7, 2008

Each February during Engineering Week, the Faculty of Applied Science and the Engineering Undergraduate Society host this social event. Held at Cecil Green Park, alumni and industry friends judged the time-honored Ball Model Competition.

### UBC Engineering at UBC Okanagan— February 13, 2008

Dean Isaacson hosted the first UBC Engineering alumni celebration in Kelowna, which included a tour of the Okanagan campus, a reception for alumni and friends and an introduction to the campus's School of Engineering. The celebration boasted an impressive turnout and marked the beginning of a longstanding commitment to the development of alumni relations in the Okanagan.

### Upcoming Class Reunions:

CIVL '68	ECEE '88
CIVL '73	MECH '68
CIVL '78	
CIVL '83	

For updates on events, please visit:  
[www.apsc.ubc.ca/alumni/events](http://www.apsc.ubc.ca/alumni/events)

### Annual Mining Dinner—February 2, 2008

The Norman B. Keevil Institute of Mining Engineering hosted the 12th Annual Mining Dinner, and celebrated the Institute's record number of students. The event provided an opportunity for students and faculty to mingle with alumni and industry partners and celebrate this year's award winners and donors, including recognition of the Government of British Columbia's commitment of \$7.5 million for mining engineering programs at UBC.



From left: Mining student Mark Morin, President and CEO of Peak Gold Robert J. Gallagher and Co-op Coordinator Nikki Scott network at the Annual Mining Dinner.

### UBC Engineering in Calgary—February 28, 2008

On Dean Isaacson's last formal visit to Calgary, over 50 guests, including alumni and Engineering Co-op students, met for a reception at the Regency Hyatt Hotel to celebrate UBC Engineering. In addition to the scheduled update, an impromptu toast was given by Barry Jessup (CHEM '74) acknowledging the many successes and milestones Applied Science has celebrated during the Dean's term.

# Engineering Education

## A Decade in Review

Over the past decade, Applied Science has made many changes—dare we say improvements—increasing student enrolment; introducing new programs; and enhancing support for teaching and learning, all to better serve society.

Since 1998, Applied Science enrolment has expanded from 3,800 to more than 5,700. In part, this has arisen through the provincial Doubling the Opportunity (DTO) initiative to double the number of electrical and computer engineering and computer science graduates. As part of its provincewide investment, DTO has provided UBC with annual funding for 1,310 student spaces.

Engineering Co-op has expanded from 400 placements a year to over 1,500 with 12% international. Over half of our undergraduate students now participate in Engineering Co-op.

Applied Science has introduced new programs and collaborations that have included the Bachelor of Applied Science (BASC) in Integrated Engineering; the BASC in Environmental Engineering (with the University of Northern British Columbia); Commerce, Honours Mathematics and IT Minors available in all BASC programs; the Biomedical Engineering Initiative, which includes masters and doctoral degrees as well as two

undergraduate options; and a full suite of new programs at UBC Okanagan—BASC, MASc, MEng and PhD programs in civil, electrical and mechanical engineering.

As well, Applied Science has resurrected the joint BASc/Bachelor of Arts degree.

In order to increase communication with students and to better serve their needs, Applied Science has established a Student Advisory Council; appointed an Associate Dean Engineering Students; and introduced a Professional Activities Fund that directly supports student projects and initiatives.

“There has been a notable shift over the past decade towards a more professional attitude within the student body, including the Engineering Undergraduate Society,” says Associate Dean Engineering Programs Bruce Dunwoody.

“The EUS is working closely with the Faculty to enhance the student experience—including participating in the distribution of the Professional Activities Fund and organizing tutoring for challenging first-year courses. As well, the student body strongly supports Engineers Without Borders, a student-run organization dedicated to improving the livelihood of people in developing countries.”

Arguably the greatest change in UBC Engineering education during the past decade has been the shift of

pedagogy and program support to emphasize communication, business and meta-skills, as well as project-based learning through both curricular and extracurricular activities.

[\(Continued next page\)](#)

## Education: Thanks to Dean Isaacson

*I have had many opportunities to work with Dean Isaacson on the Engineering Design Centre... as well as the ongoing activities of the society. He has helped students through a variety of projects such as the creation of the Student Development Officer position, and (provided) strong support for student team workspaces in the upcoming design centre... I am grateful for Dean Isaacson's support on these initiatives and for the leadership he has provided....*

**Andrew Carne**  
Secretary,  
Engineering Undergraduate Society

*...Michael strives to advance the engineering education at all levels in British Columbia. His enthusiasm and energy have been instrumental in garnering increased research funding and large benevolent contributions from the community to improve the engineering school's infrastructure.*

**Stanley R. Cowdell**, P.Eng  
Civil Eng '73  
President,  
Westmar Consultants Inc.



Students from across disciplines compete in Engineers Without Borders' Designs for a Sustainable World challenge, encouraging students to critically and creatively solve development-related problems using recycled materials. From left: Tom Mazur, Caryn Liberman, Alexander Nguyen (Team Captain), Sandra Zheng, Ben Starkey and Rory Moglove create a model of a biogas reactor.

## Research: Thanks to Dean Isaacson

*Dean Isaacson's vision is responsible for creating a vibrant biomedical engineering presence on campus. His determination to establish a formal biomedical engineering infrastructure positions UBC alongside universities with long-established biomedical engineering programs. The creation of new undergraduate and graduate programs, the recruitment of capable new faculty, dedicated facilities, and significant financial support are elements in this development. UBC is now well positioned to serve both the research and industrial demands of the health care field. Dean Isaacson deserves both our gratitude and our support for enabling biomedical engineering to become an integral part of the Faculty of Applied Science at UBC.*

### **Charles A. Laszlo**

Professor Emeritus,  
UBC Department of Electrical and Computer Engineering

*I came to know Michael six years ago, over a dream to create a strategic partnership between UBC Applied Science and NRC-IFCI focused on hydrogen and fuel cell research. He immediately shared my enthusiasm, perhaps even exceeding it. Through our strategic MOU and its Steering Committee, we created joint projects and positions, including the creation of the Canada Research Chair in Clean Energy and Fuel Cells that attracted Dr. David Wilkinson....*

*One cannot work with a more strategic, hard-working, task-oriented person than Michael. He triggers new, progressive ideas. He then builds on these ideas, creates opportunities, and does it all sooner rather than later....*

### **Maja Veljkovic**

Director General,  
NRC-IFCI

*Dr. Isaacson's stewardship of research over the span of his illustrious career is extensive. As UBC's former Vice-President Research, I had the privilege of seeing his contributions enrich our engineering landscape. His leadership was key for the advancement of world-class research infrastructure and projects at UBC, moving the institution towards a leadership position in engineering.*

**Indira V. Samarasekera, O.C.**  
President and Vice-Chancellor,  
University of Alberta

## Research... con't from p.5

Initially signed in November 2002, the current five-year MOU between Applied Science and NRC-IFCI renews the partnership to collaborate in fuel cell, hydrogen and clean energy research and development; in training highly-skilled personnel; and in activities for the improvement of the environment and economy through science and technology.

Applied Science's MOU with Forestry and FPInnovations establishes one of the world's strongest

forest-related research, development and dissemination clusters. This collaboration positions the partners to effectively pursue ongoing research initiatives in forestry—the largest manufacturing industry in British Columbia and Canada.

Overall, since 1998 Applied Science research programs have escalated—in volume, funding and prestige—and continue to serve the people of British Columbia, Canada and the world.

---

## Education... con't from p.11

This includes the establishment of two major innovative learning programs—the Project Integration Program in Electrical and Computer Engineering and the Mech 2 program in Mechanical Engineering.

Applied Science has created the Centre for Instructional Support, dedicated to the support of faculty teaching, and the Centre for Professional Skills Development—part of its function being to support student learning through improved communication skills. The Faculty also created two Student Development Officer positions that work with students to enhance their professional skills.

External recognition, evidenced by industry support, awards, media coverage and competition results, validate this

hands-on approach and attention to meta-skills.

The Mech 2 program has received multiple awards, including UBC's Alfred Scow Award; the American Society of Mechanical Engineers' Curriculum Innovation Award; and most recently, the Society for Teaching and Learning in Higher Education's Alan Blizzard Award.

As well, during the past decade many of UBC Engineering's student teams have enjoyed phenomenal success, perhaps the most noteworthy being UBC's SAE Supermileage team, lauded as one of *Time Magazine's* Best Inventions 2006.

The Faculty of Applied Science is proud to provide students with educational enhancements to serve society's needs and best prepare them for careers in engineering.

Engineering education: Tuum est—It is yours.

# Engineering—the Okanagan

## Three Years in Review

A decade ago, there was no UBC Okanagan. But since its inception, changes to the campus and the School of Engineering have been substantial in terms of faculty, students and infrastructure.

In fall 2005, the School opened with just seven faculty members, one administrator and an administrative team borrowed from the Vancouver campus.

Current School of Engineering Director Spiro Yannacopoulos took leadership in the summer of 2006 and has since been working tirelessly to further develop the School.

“Starting an engineering school is a tremendous undertaking—one that rarely occurs. Our School exists thanks to the vision and wisdom of Dean Isaacson. He, alongside a small group of dedicated and visionary engineers and entrepreneurs, worked ceaselessly and creatively to bring a unique engineering school to B.C.’s Interior,” says Yannacopoulos.

“Under Dean Isaacson’s guidance, the School was conceived to be a place where students could learn from superb teachers and researchers in an intimate setting. This vision is being realized on a daily basis, as our world-class faculty use project-based learning, small classes and an integrative approach to engage, inspire and educate students. As our students know, engineering is a team-based activity, and

the School of Engineering exists as proof of that.”

During fall 2005, 70 undergraduates commenced their university education at the School of Engineering, and as those initial students approach graduation in 2010, the student body has grown to 248 undergraduate and 15 graduate students in civil, electrical and mechanical engineering. Most students participate in the Engineering Co-op Program, which provides valuable work experience.

In response to the increasing number of students, the faculty complement has tripled to 21 with plans to ultimately grow to 42. In addition to teaching, faculty conduct leading-edge, industry-relevant research.

The UBC Okanagan campus has doubled in size since its inception and the infrastructure would not be complete without a building for the School of Engineering. Construction for the new \$74 million Engineering and Management Complex began this April.

“We—the engineering profession, B.C.’s southern interior region and society at large—owe a great deal of thanks to Dean Isaacson for his vision, determination and leadership in establishing advanced engineering education and research at UBC Okanagan,” says Dick Fletcher P.Eng., President of Engineers Canada and Principal with Urban Systems Ltd.



Artist's rendering of the Engineering and Management Complex.

“The UBCO School of Engineering will have extensive positive repercussions including addressing

the provincial shortfall of engineers and providing the educated people who are imperative to B.C.’s economy.”

## UBC Okanagan: Thanks to Dean Isaacson

*...During the transition from Okanagan University College to UBC Okanagan... (Dean Isaacson) always led with passion and determination, and was committed to bridging opportunities between UBC’s campuses. Dr. Isaacson provided exemplary leadership as he established the UBC Okanagan Engineering Task Force and made the School of Engineering a reality...*

**Alaa Abd-El-Aziz**  
Provost (Okanagan),  
UBC

*On March 17, 2005, UBC came to the Okanagan. What followed was an intense process to create a new working campus within a 16-month time frame. There were many individuals and groups who contributed to this effort, with the input from Dean Michael Isaacson being crucial to the success of the undertaking.*

**Aidan Kiernan, P.Eng.,**  
AVP, Operations,  
UBC Okanagan

*...The profession found in him a strong spokesman and an individual who understood their needs and responded appropriately. Nowhere was this more evident than in the creation of an engineering Faculty at UBC Okanagan... Michael was a force to be reckoned with but his advocacy for engineering... was coupled with a willingness to partner in finding solutions to the issues at hand.*

**Barry McBride,**  
Former Provost and Deputy Vice Chancellor,  
UBC

# Engineering Infrastructure

## A Decade in Review

Supporting strategic growth in engineering education and research can be an expensive yet undeniably valuable endeavor. Over the last decade Applied Science has been able to expand its resources substantially in order to support strategic growth and invest in its physical infrastructure.

Since 1998, Applied Science has seen the completion of over \$100 million in capital construction including the Chemical and Biological Engineering Building; the Clean Energy Research Centre (CERC); the Earthquake Engineering Research Facility; the Fred Kaiser Building; and the Institute of Computing, Information and Cognitive Systems (ICICS) expansion.

As well, planning and development has commenced for the UBC Okanagan Engineering and Management Complex, the Wayne and William White Engineering Design Centre and the Norman B. Keevil Institute of Mining Engineering facilities.

Housed in inadequate facilities and various locations for many years, the Department of Chemical and Biological Engineering now occupies its own building, completed in spring 2006. The new building consolidates the department's activities and accommodates a broad range of research and learning.

Connected to the north side of the Chemical and Biological Engineering Building, CERC provides laboratories for more than 120 multi-disciplinary researchers focusing on developing sustainable energy systems. CERC received an important Canada Foundation for Innovation (CFI) award to fund the construction. [\(Continued next page\)](#)



1. The Chemical and Biological Engineering Building
2. ICICS expansion
3. The Clean Energy Research Centre
4. The Fred Kaiser Building
5. The Earthquake Engineering Research Facility



## Infrastructure...

The Earthquake Engineering Research Facility provides a key space to investigate the effects of earthquakes. The facility houses three shake tables, among them a 100-tonne capacity table for testing large-scale models.

Serving as the administrative hub of engineering at UBC's Vancouver campus, the Fred Kaiser Building centralizes Engineering Student Services, the Centre for Professional Skills Development and the Applied Science Dean's Office, as well as housing the expansion of the Department of Electrical and Computer Engineering. Crucial for enabling the Province of British Columbia's 2001 Doubling the Opportunity initiative's goal of doubling the number of high-technology undergraduates, the expansion allows for more than 600 additional students to study electrical and computer engineering and mechanical engineering at UBC.

The Institute of Computing, Information and Cognitive Systems (ICICS) received a major CFI grant to help finance the expansion of research facilities for investigating information technologies from a human-centered perspective. Key components of ICICS are the research programs conducted by faculty members within the Departments of Electrical and Computer Engineering and Mechanical Engineering.

"During Dean Isaacson's tenure Applied Science facilities have increased both in size and quality to meet the ambitious goals of the Faculty—its schools and departments," says Ron Loewen, Capital Projects Manager. "Michael's drive and focus have been essential to the unprecedented development of facilities to further engineering education and research."

# Appointments

## Materials Engineering

**Edouard Asselin** was appointed Assistant Professor on November 1, 2007. His research interests lie in the fields of high temperature/high pressure (HT/HP) hydrometallurgy and HT/HP electrochemistry.

**Guangrui Xia** was appointed Assistant Professor on March 31. Her research expertise is in the field of electronic materials and devices, physics of nanofabrication and semiconductor process modeling and simulations.

## Mining Engineering

**Dirk van Zyl** was appointed Professor on January 1. He is an expert in the geotechnical and risk aspects of mine waste disposal and heap leach design,

as well as mining and sustainability and mining life-cycle management.

## UBC Okanagan School of Engineering

**Peter Hallschmid** was appointed Assistant Professor on January 1. His research interests are in the area of computer engineering with an emphasis on configurable processors, field-programmable gate arrays and computer-aided design.

**Solomon Tesfamariam** was appointed Assistant Professor on January 1. His research focuses on earthquake engineering, seismic risk analysis of reinforced concrete structures and risk-based decision making for infrastructure management.

## Alumni:

### Thanks to Dean Isaacson

*These days, to be a successful university dean requires the strength of steel, the intellect of an Einstein, the flexibility of Cirque du Soleil, and the tact of a butler. Having watched successive UBC engineering deans multi-task through their terms, I can vigorously state that Michael Isaacson has performed splendidly on all of these various dimensions.*

*Whether one considers raising millions from the mining industry, calming the waters after the latest EUS escapade, or simply building the human resources of a splendid engineering faculty, Michael has added to the reputation of our superb engineering school.*

**Ralph Sultan, MLA**

Mech Eng '56

Former President Engineering Undergraduate Society

*...Michael spoke eloquently and passionately about the considerable success of the past years, the ongoing challenge of maintaining a world-class Faculty and with optimism and enthusiasm about the future. It inspired me as it has many other alumni to support Michael and his team, to give back by sharing our time, our talents and our treasures, the trilogy of good stewardship...*

**Alan Hutton**

Mech Eng '64

Former President and CEO, FundServ

*From my perspective as an Engineering Advisory Council member and an alumnus, I have admired Dean Isaacson's exceptional ability to engage alumni from different industries, drawing out a wide perspective of ideas, culminating in well vetted conclusions to a number of Engineering Faculty initiatives.*

*An important benefit deriving from the relationships that Dean Isaacson has built with the alumni and their corresponding industries is the fundraising support from these individuals and their respective corporations. Their financial support is a testament to their trust and confidence in Dean Isaacson's strong leadership of the Faculty.*

*The diverse partnerships that Dean Isaacson has fostered during his tenure will have an ongoing positive impact on UBC Engineering for many years to come.*

**Henry Man**

Chem Eng '83

CEO, Magellen Developments Inc.

# Achievements

Chemical and Biological Engineering Professor **Peter Englezos** has been appointed the inaugural holder of the Advanced Papermaking Initiative Professorship.

Chemical and Biological Engineering Professor **John Grace** has received two honours: he has received the Thomas Baron Award from the American Institute of Chemical Engineering, and his Tier 1 Canada Research Chair in Clean Energy Processes has been renewed for an additional seven years.

Chemical and Biological Engineering Professor Emeritus **Paul Watkinson** has been appointed a Distinguished Visiting Fellow of the United Kingdom's Royal Academy of Engineering.

Civil Engineering Professor **Jonathan Fannin** has been appointed a Distinguished Visiting Fellow of the United Kingdom's Royal Academy of Engineering.

Civil Engineering Professor **Don Mavinic** has been appointed Assistant Editor-in-Chief of NRC Research Press.

Electrical and Computer Engineering Professor and Department Head **Vijay Bhargava** has been awarded the IEEE R.A. Fessenden Silver Medal.

Electrical and Computer Engineering Professor Emeritus **Ian Cumming** has received the Career Recognition Award for his

presentation, "Perspectives on Synthetic Aperture Radar (SAR) Processing," at the Canadian Space Agency's 2007 Advanced SAR Workshop.

Electrical and Computer Engineering Professor Emeritus **Hermann Dommel** has received the IEEE Power Medal.

Electrical and Computer Engineering Professor and UBC Pulp and Paper Centre Director **Guy Dumont** has received two honours: he has been appointed Associate Editor of the IEEE Transactions on Information Technology in Biomedicine; and he, along with graduate students **Ping Yang** and **Chris Brouse** (and UBC Anesthesiology, Pharmacology & Therapeutics Assistant Professor Mark Ansermino), has received The Society for Technology in Anesthesia Award for Best Abstract in Clinical Application of Technology at the 2007 Annual Meeting of the American Society of Anesthesiologists for *Clinical Evaluation of iAssist: A Novel Software Tool To Detect Change in Physiological Monitoring*.

Electrical and Computer Engineering Professor Emeritus **Robert Ito** has been appointed to the Board of Directors of Engineers Canada.

Electrical and Computer Engineering Associate Professor **Lutz Lampe** has received a UBC Killam Research Prize.

Electrical and Computer Engineering Associate Professor **Robert Schober** has received the

Friedrich Wilhelm Bessel Research Award of the Alexander von Humboldt Foundation.

Electrical and Computer Engineering Professor Emerita **Rabab Ward** has received the IEEE Signal Processing Society Award.

Electrical and Computer Engineering Associate Professor **Steve Wilton** (along with Imperial College colleagues C. Ho, C.W. Yu, P. Leong and W. Luk) has received the Best Paper Award at the 2007 International Conference on Field-Programmable Logic and Applications for the paper *Domain-Specific Hybrid FPGA: Architecture and Floating Point Applications*.

Materials Engineering Professor **Matthias Militzer** has received the Dofasco Award of the Materials Science and Engineering Section of the Metallurgical Society of the Canadian Institute of Mining, Metallurgy and Petroleum.

Materials Engineering Professor Emeritus **Alec Mitchell** has received the Research and Development Prize of the Japan Titanium Society.

Materials Engineering Professor **Anoush Poursartip** has been elected President of the International Committee on Composite Materials.

Mechanical Engineering Professor **Clarence de Silva** has been appointed a Visiting Erskine Fellow of the University of Canterbury.

*Ingenuity* is published by the Faculty of Applied Science, The University of British Columbia. [www.apsc.ubc.ca](http://www.apsc.ubc.ca)

#### Editor and Writer:

ErinRose Handy  
Communications Manager  
Faculty of Applied Science  
Tel: 604-822-1524  
Fax: 604-822-7006  
[erinrose.handy@apsc.ubc.ca](mailto:erinrose.handy@apsc.ubc.ca)

#### Contributors:

Tracey Charette  
Martin Dee  
Darin Dueck  
Hillary Gosselin  
Sherry Green  
Clare Kiernan  
Omicron  
Lars Rose  
Jeannie Scarfe

**Design and Production:**  
Tandem Design Associates Ltd.

**The Faculty's engineering activities include the following:**

#### Departments 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
- UBC Okanagan 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
- Pulp and Paper Centre

#### Mailing address:

*Ingenuity*  
UBC Faculty of Applied Science  
5000—2332 Main Mall  
Vancouver, BC V6T 1Z4