Join us at the Open House for a day of celebrating this milestone and the remarkable achievements of our PPC community. The Open House will give our alumni the opportunity to reconnect and network with their peers, faculty members, and today’s talented students, and it will also give students the opportunity to meet PPC alumni and industry professionals in a fun and informal setting. There is no cost to attend the Open House and all registered participants will receive a light lunch. See pg. 2 for full program.

The Centre is also organizing an Alumni Dinner the night before the Open House. *You can join us at both events, or as your schedule permits*

We’ve lost touch with some of our alumni and need your help! Please help us spread the word to anyone who you still keep in touch with. We hope to see you all in May.

**Open House Event Details:**
Saturday May 28th, 2016
11:00-5:00 pm
(Join us for the whole day, or stay for a while)
Pulp and Paper Centre
2385 East Mall, Vancouver

**Alumni Dinner Details:**
Friday May 27th, 2016
6:00-10:00 pm
Vancouver BC
Cost of $100 per person associated with this event
The Centre welcomes back Nuwan Sella Kapu! Nuwan is now an Instructor for various courses for UBC’s new MEL in Green Bio-Products professional program. Nuwan has more than fifteen years experience in the plant sciences and biomass processing. He obtained his Ph.D. (2006) in Plant Biology specializing in cell wall biology and biochemistry from the Pennsylvania State University, University Park. In 2007, he joined Expanse Technologies, Inc., a start-up company, as Principal Scientist to spearhead research and development programs to commercialize plant cell wall proteins to produce biofuels. From 2010-2015 Nuwan led research efforts in ethanol fermentation and bamboo pulpimg with Drs. Jack Saddler, Mark Martinez and Rodger Beatson at UBC. He later joined FFInnovations as a Scientist in the Chemical Pulping-Process Engineering group and worked on mill-targeted, applied research programs in Kraft pulping. His current research interests are focused on developing technologies for bio-products and biofuels.

Yuan Liu, Visiting Scholar working with Prof. Mousa Nazhad on the Foam Paper project.

Jordan Mackenzie, returns as Post-doctoral Research Fellow working with Prof. Mark Martinez.

Chao Qu and Yinfeng Zhao, both Visiting Scholars working on the Biomass Gasification project with Prof. Xiaotao Bi.

Yuan Liu

Jordan Mackenzie

Chao Qu

Yinfeng Zhao

**LOCATIONS:**
- *Seminars (11:00-12:00 pm) @ Chemical and Biological Engineering building
- *Open House (12:00-5:00 pm) @ Pulp and Paper Centre
- Alumni Dinner hosted on May 27th, visit ppc.ubc.ca/PPC30 for details and registration

Abstract: Latency removal in the mechanical pulping process occurs in a continuous stirred-tank reactor and non-ideal mixing lowers the performance. In order to optimize the latency removal process and reduce the energy consumption in the operation, a kinetic study was carried out. In the study, the phenomenon of latency and knowledge related to latency removal were critically reviewed and discussed. Latency removal was characterized by the change of Canadian Standard Freeness (or freeness), and its dependences on treatment conditions, i.e., disintegration temperature, power input, pulp consistency and time, were determined. Kinetic models of latency removal for secondary refiner thermomechanical (TMP) and bleached chemithermomechanical (BCTMP) pulps have been developed, which were based on the rate of latency elimination characterized by the decrease of freeness.


Abstract: This report describes the fabrication of hybrid paper made from wood fibers to which barium titanate (BaTiO3) nanoparticles were anchored. This hybrid paper is mechanically as strong as commercial printing paper (breaking strength 11.5N/mm²) but is flexible and possesses a large piezoelectric coefficient (d33= 37-45, 71.2 pC/N). Using this paper, we demonstrate an accelerometer, with a sensitivity of 82.45 pC/g. The accelerometer is formed by laminating the piezoelectric paper with electrodes made from conductive ink and a seismic mass is bonded to this assembly. According to our data, the performance of the accelerometer was very similar to that of a conventional piezoelectric accelerometer.


Abstract: The performance of three foil rotors was assessed using a range of rotor speeds and slot velocities. Power consumption and pulse strength both increased with increased foil thickness. While screen capacity generally increased with pulse strength, there was no simple and direct correlation and other factors remain important. Capacity was found to be determined by factors other than simply the greatest magnitude and frequency of backflush pulsations.

Bill Adams, Director of Sustainability and Technology at Canfor Pulp, is also a UBC alumnus having graduated with a Masters of Chemical Engineering degree in 1991.

On February 29th, Bill joined us at the Centre for the inaugural Industry Night (see Industry Night on pg. 9) so we took the opportunity to ask Bill some questions to gain insight into his successful career and experience.

Give us your career story in a nutshell. We’d love to hear what brought you to where you are now.

My career has been an amazing journey of variety in terms of opportunity, locations and the roles that I have done in this exciting industry. I have worked in increasingly senior roles for four companies in 7 locations over my 30 year career. I am currently Sr. Director, Sustainability, Technical Services and Innovation at Canfor Pulp. This versatile role includes supporting Canfor Pulp’s Innovation initiatives as well as leading our sustainability platform and global technical services. My career highlight was definitely leading the transformation at Donmar Kamlumps which included $150 million in capital investments over a 3 year period and securing a long term energy contract to sell renewable energy to BC Hydro.

Is it typical for someone in the P&P industry to be able to explore various roles as much as you have?

The pulp and paper industry is full of opportunities and progressive companies support career paths that enable talented individuals to explore various roles. In addition to working at multiple mills, I had the opportunity to work in operations, corporate development, capital project management, maintenance and strategic planning. The diversity of roles in the industry is a key reason why young professionals should strongly consider this industry.

What are some of the key changes you have seen the industry go through?

The pulp and paper industry has been undergoing significant changes in recent years. The focus on the biorefinery model for pulp mills brought young engineers and technical staff to be more versatile. The mill operations are leaner in terms of staffing levels. This requires young engineers and technical staff to be more versatile. The focus on the biorefinery model for pulp mills brought new excitement to the industry as the companies strive to secure additional revenue streams to stay competitive. The top quartile of our mills has enabled us to invest in the top quartile of our mills has enabled us to invest in the top quartile of our mills has enabled us to invest in.

What is a Sustainable Enterprise? Why is it important?

Our approach to the Sustainable Enterprise ensure the Social, Environmental and Economic values are all key goals of our success. Canfor wants to be a strong community support and employer of choice in this industry while maintaining a strong environmental and economic performance. The top quartile of our mills has enabled us to invest in the top quartile of our mills has enabled us to invest in the top quartile of our mills has enabled us to invest in the competitive and environmental improvements of the mills we operate. The other key parameter is our fiber sourcing and to ensure we support fiber from sustainably managed forests.

What is your advice to current graduate students who will consider pursuing a career in P&P/forestry?

The pulp and paper industry and the related sectors like biofuels and biomaterials will be an increasingly exciting industry to work in because of the emerging values of sustainability and the desire to use renewable resources by our society. Advanced education in these fields will be key to be successful in the industry.

What industry related blogs or books are you currently reading?

I am an avid reader of industry literature including Pulp & Paper Canada and Paper 360 magazine. I also read a steady diet of sustainability literature and technical papers related to the forest products industry and the transformation technologies that are related to the biorefinery concepts. I attend two to three conferences each year and read the technical papers that are presented at the conference.

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Clean water no longer a pipe dream

For many remote communities, including First Nations communities, clean drinking water is far from assured. Many do not have proper infrastructure and resources to treat their water, and boil-water advisories are a frequent occurrence, particularly during spring runoffs.

This is what first inspired UBC chemical and biological engineer- ing professor Madjid Mohseni to take action. He has been working with remote and First Nations communities for more than 15 years to develop local, reliable water treatment systems. Mohseni is also the scientific director of RES/EAU-WaterNET, an organization working to develop sustainable water-treatment technology for small rural communities, and is currently funded by IC-IMPACTS, which promotes research collaborations in water, infrastructure and public health. In this Q&A, he explains how his team helped design a water treatment system for a First Nations community in Lytton, B.C.

Why is providing clean drinking water such a challenge in certain areas in B.C.?
Many rural and First Nations communities are remote and scarcely populated, and hence are disproportionately affected by a lack of access to reliable and safe drinking water. For example, one community we’re working with is reached by a single, 70-kilometre logging road. Many communities like this draw water from streams or wells or have it delivered. But deliveries can be cancelled due to storms and impassable roads. Natural sources could become contaminated by spring runoffs and other factors. At any given time, B.C. has an average of over 500 boil-water advisories, nearly all of which are capable of breaking down and eliminating harmful bacteria.

What disinfection solutions are you working with and how do they work?

One of the focus areas for my research is ultraviolet (UV) technology, an established and proven process for disinfecting water. One of the main disinfection strategies involves ultraviolet light. UV light is capable of inactivating or preventing them from causing infection. It is inexpensive, robust, and easy to set up, operate and maintain. It can be monitored remotely. All this makes it a viable solution for remote communities with little capacity and resources. Inactivating or preventing them from causing infection. It is inex-

What’s next?
We’ll continue working with several other communities to come up with sustainable water solutions. It’s entirely feasible to replicate the success of our community-centric solution-finding strategy in other communities. We’re improving our approach as well as technological solutions. For instance, we are working on the next generation of UV sources, which are capable of breaking down and eliminating harmful chemicals that might be present in water.

The Master of Engineering Leadership (MEL) in Green Bio-Products is a new program jointly offered by the UBC Faculty of Applied Science, Faculty of Forestry and the Sauder School of Business, and its goal is to train the future leaders and professionals of the growing bio-products sector. To give students insight into this exciting field, Industry Nights are being arranged so experienced professionals can share their working experience with students.

The inaugural Industry Night took place on February 29th, with Bill Adams, Director of Sustainability and Technology at Canfor Pulp, and also a UBC alumnus. Bill gave a detailed presentation on his organization’s history, and provided valuable insight into the current state of affairs and what the future holds. The session was extremely successful and attended by a large group including students, faculty and staff (see pg. 6-7 for Q&A with Bill Adams).

The 2nd Industry Night is scheduled for April 12th, and the speaker will be Dr. Robert Gooding. Robert is Vice President at Aikawa Fiber Technologies, and he is also an Adjunct Professor at the Department of Mechanical Engineering at UBC. We’re improving our approach as well as technological solutions.

The MEL Green Bio-Products students had the oppor-
tunity to visit the FPInnovations Research Centre located at 2665 East Mall, Vancouver on March 21st. The tour was planned to give the students an insight into one of the world’s largest R&D organizations in Forestry.

Headquartered in Pointe Claire, Quebec, the organization has 11 major research programs including market pulp, biomaterials, bioenergy & energy, forest operations and wood products manufacturing. Some of FPInnovations’ recent successes include the world’s first cellulose filament demonstration plant, established in partnership with Kruger Inc. and CellForce, a joint venture with Dom-
tar Inc. and Schlumberger, which operates the world’s first cellulose nanocrystals plant. Moreover, Canada’s first commercial-scale lignin recovery plant at West Fraser’s Hinton Pulp Mill will use LignoForce technology developed by scientists at FPInnovations.

Dr. Ho Fan Jang, Dr.Tessie Tong and Mr.Tim Caldecott treated the students to a comprehensive tour of the research facilities including the Silvican system, Confocal Microscopy Scanning Electron microscopy, and the Building Systems Lab. They also conducted tests on UBC’s 18 storey, wood-based student residence, which is currently under construction and is scheduled to open in September 2017.

Following the tour, students met with Dr.Trevor Stuthridge, Executive Vice President, FPInnovations for a lively Q&A session. Dr. Stuthridge provided valuable insight into the organization’s business model, future opportunities and possible challenges.

Silvican houses equipment and assorted software that enable the non-destructive, high-throughput evaluation of the structure and quality of wood. The system uses optical microscopy, X-ray densitometry and X-ray diffrac-
tometry to analyze a wood sample and the results have wide applications in solid wood, pulp and paper products manufacturing. Confocal microscopy allows high resolution imaging of a material, and at FPInnovations the technique is used to support new product development and pulp and paper product quality control. The Building Systems Lab develops alternative wood building system solutions for a number of industry sectors, including platform frame wood construction, heavy timber frame construction, cross-lami-
nated timber (CLT), and hybrid constructions. The lab is also conducting tests on UBC’s 18 storey, wood-based student residence, which is currently under construction and is scheduled to open in September 2017.
Part of the Pulp and Paper Centre’s Professional Development Series, students now have an opportunity to enroll in a 9-hour, hands-on course.

**Introduction to Machine Shop** will teach participants the fundamental skills required for basic machine shop operations. Through a combination of lectures and project work, students will learn how to use precision measurement tools such as micrometers and vernier calipers, learn the processes required for semi-precision layout, cutting speeds and feeds, Horizontal Band Saw operation, Sensitive Drill Press and drilling operations; threads types and thread cutting.

Comprised of theoretical lectures, demonstrations and videos, learning will be reinforced by building a project from start to finish using industry standard tools and methods. The course Instructor is a Certified Machinist and Engineering Technician.

**Fluid Systems** will teach participants the fundamental skills required for rudimentary pipe and tubing assemblies. This course focuses on pipe and tube, and an introduction to pumps and valves. Students will learn how to identify sealing thread types; the differences between pipe and tube, pipe fitting basics including pipe thread cutting and assembly, compression tube fitting and bending, and methods for fluid system leak testing. Learn how to identify and apply different types of pumps and valves.

Comprised of theoretical lectures, demonstrations and videos, learning will be reinforced by building a project from start to finish using industry standard tools and methods. The course Instructor is a Certified Machinist and Engineering Technician.
Greenest City Scholars Program

Michael Coulson, a Master of Engineering Leadership in Green Bio-Products student, has been accepted in the UBC Greenest City Scholars Program. This program is a collaboration between UBC’s Sustainability Initiative and the City of Vancouver to work on sustainability projects with the City in support of the Greenest City 2020 Action Plan.

The principal internship period runs from early May to mid-August each year, and students work 250 hours over the summer - internships are paid and open to all graduate students of UBC. Michael will be evaluating the use of higher blends of biofuels in the Vancouver fleets, looking into their limitations, costs and feasibility. This experience will prove to be extremely beneficial as he gains valuable knowledge that promises to enrich his academic and professional career.

For more information on the Greenest City Scholars Program, visit sustain.ubc.ca/get-involved/students/greenest-city-scholars.

Safety

With an increasing numbers of reported assaults on the UBC Vancouver campus, more Campus Blue Phones have been installed around campus, including at the main entrance of the Pulp and Paper Centre. These phones, many which are equipped with security cameras, connect with a Campus Security dispatcher and are available 24/7 for emergencies, Safety Walking, directions and assistance. Please remember to be vigilant and look out for one another - it is the best way to ensure our campus remains a safe environment for all. For those wishing to receive updates and alerts, you can sign up at security.ubc.ca

Emilia Jahangir received the February Lab Safety Inspection award for keeping the refiner area and lab 127 neat and tidy.

PPC Emergency Procedures have been updated and posted along hallways and exits. For more information, please contact George Soong, Safety and Operations Officer.

Tours of PPC

The Centre offers public tours throughout the year. On February 19th and March 18th, PPC staff gave tours to high school students who are considering pursuing an Engineering degree at UBC.

If you are interested in a group tour of the facilities or want to learn more about research conducted at the Centre, please contact Anna Jamroz at anna.jamroz@ubc.ca

GREEN BIO-PRODUCTS
BECOME A GREEN BIO-PRODUCTS ENGINEERING EXPERT

If you’re thinking about concentrating your career in the green bio-products sector, think about the difference a year at UBC can make. Build knowledge. Cross disciplines and boundaries. Gain confidence. Master the leadership skills that will take you to the next level. Invest in yourself, and in the growing bio-economy, at UBC.

From pharmaceuticals, food packaging, clothing and building materials to cutting-edge carbon nanofibres and biofuels, a new generation of green bio-products is being developed as a viable replacement for oil-based products and fuels. UBC has an exceptional group of researchers who are furthering the development of biomaterials from trees, including specialty paper applications, fibre- and fibril-reinforced materials, and carbon fibres from lignin. The UBC Master of Engineering Leadership (MEL) in Green Bio-Products is designed to develop highly qualified personnel with the specialized knowledge and practical experience to assume challenging roles in the rapidly evolving lignocellulosic biomass products sector.

Unique in North America, this new degree will support graduate participation in the development of advanced technical processes, product ideation and senior project management roles.

CREATED BY THE FACULTIES OF APPLIED SCIENCE AND FORESTRY AND THE SAUDER SCHOOL OF BUSINESS

The Faculty of Applied Science at UBC is home to one of North America’s premier engineering schools—UBC Engineering— bring together 12 engineering programs. The UBC Faculty of Forestry is Canada’s largest forestry school and a leader in education and research for forest conservation, forest products and natural resources.

The Sauder School of Business is one of the world’s leading academic business schools and is dedicated to rigorous, relevant and experiential teaching. Together, these educational leaders collaborated closely with leading green bio-products industry members to create the UBC Master of Engineering Leadership in Green Bio-Products degree.
Upcoming Events

Vancouver Tree Week
April 2-10
Over a dozen tree-themed events, talks and walks will be happening all week. The event supports Vancouver's goal of planting 150,000 new trees in Vancouver by 2020. Got questions? Email pbtree@vancouver.ca #VanTreeWeek

End-of-term Centennial Celebrations
April 6, begins at 10:30 am, outside bookstore
An impressive, 34-foot tall post carved by Musqueam artist, Brent Sparrow Jr., will serve as a permanent welcome to all the visitors to these grounds and as a reminder of our relationship with the Musqueam people who were here long before UBC's history began. For complete program, visit ubc100.ca/v-celebration

Industry Night
April 12, 3:00-4:00pm, PPC room 101
Join us at Industry Night to hear from Dr. Robert Gooding, Vice President, Technology at Aikawa Fiber Technologies.

CHBE Research Seminar
April 15, 11:00-12:00 pm, CHBE room 102
Dr. Simcha Srebnik, Dept. of Chemical Engineering at Technion - Israel Institute of Technology will be speaking on “Molecular Modeling and Application: From Simple to Exact Models”

PACWEST Conference
June 8-11, Jasper, AB
Six PPC researchers will be presenting technical papers and presentations at PACWEST. Join us to learn about their latest innovations. Program details can be found at www.pacwestcon.net

International Bioenergy Conference & Exhibition
June 15-17, Prince George, BC
Registration now open. You’ll gain access to one of the most powerful platforms for building your business and sharing information about the biomass and bioenergy sector. Visit bioenergyconference.org for more info.

PPC 30th Anniversary Open House
May 28, 2016, 11:00-5:00 pm, UBC (+ Alumni Dinner, May 27, Vancouver)
Join us for a day of inspiring seminars, student poster session, interactive lab tours and demonstrations, networking, and catch up with your old friends from the Centre. Update your contact information at: ppc.info@ubc.ca

Thanks for all your TWITTER support. Below we share a few of our recent tweets:

UBC Pulp & Paper Centre @ubcPPC 30 MAR
West Fraser’s Slave Lake Pulp Mill creates green power from #biogas ow.ly/106qCC

UBC @UBC 30 MAR
#UBC100 Emerging Research Workshop: Water Ways ow.ly/Z2UKv

UBC Pulp & Paper Centre @ubcPPC 16 FEB
Hand tapping at our #TechnicalTraining course. Should you be here? @ubcengineering (photo)

UBC Pulp & Paper Centre @ubcPPC 26 JAN
Seminar Jan. 27 at Noon in @ubcPPC room 101 “MRV measurements at KTH: comparison to DNS and fibre suspension flow.

UBC Pulp & Paper Centre @ubcPPC 25 JAN
Annual API course “Intro to P&P Tech” for eng students & industry. Registration now open ow.ly/XvGh3 (photo)

Social Media

Follow us on Twitter @ubcPPC
NEW: MEL Green Bio-Products @MELgreenbio
Like us on Facebook /ubcPPC
NEW: MEL Green Bio-Products /UBCMELgbp
Visit us online: www.ppc.ubc.ca

Contact

To submit items to PPC’s Pulp Digest or to join our mailing list, please contact Anna Jamroz, Communications Coordinator at: anna.jamrozo@ubc.ca