

# *Pulp Digest*

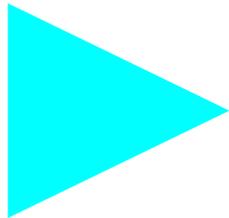
*PPC's Community Newsletter*



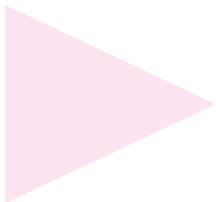
Pulp and Paper Centre

*Issue #2  
July to December 2019*

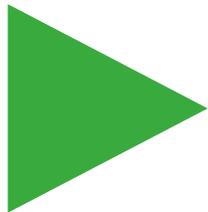
# Issue #2, 2019



PPC's announcements



Mark this date: International  
Mechanical Pulping Conference



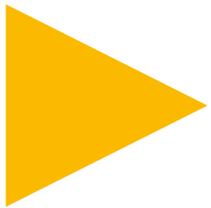
Local safety team at PPC

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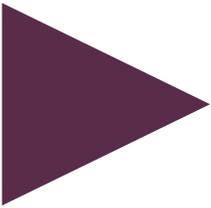
*Our community newsletter*

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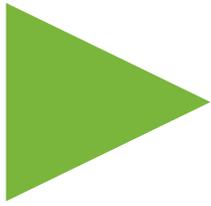
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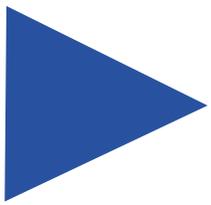
Grad achievements



Personnel news



News from the BioProducts Institute



Our student and researcher community



# What's the buzz about?

After six years as  
Director of the Pulp  
and Paper Centre,  
Prof. Mark Martinez's  
term comes to a close  
at the end of this  
year.

We'll miss you, Mark.

And thank you ever  
so much!

**PPC welcomes  
Dr. Orlando Rojas**

**Canada Excellence Research Chair in Forest  
Bioproducts**

Dr. Orlando Rojas will join the Department of Chemical and Biological Engineering as Canada Excellence Research Chair (CERC) in Forest Bioproducts, with shared affiliation in the Departments of Chemistry and Wood Science. He comes to UBC from Aalto University in Finland, where he has led a national cluster to advance the Finnish materials bioeconomy. His research group, Biobased Colloids and Materials (BiCMat), will set foot in UBC to expand a network of more than 54 PhD students and 36 postdoctoral fellows he has supervised or is supervising.

Prof. Rojas is the 2018 Recipient of the Anselme Payen Award and is an elected Fellow of the American Chemical Society and the Finnish Academy of Science and Letters. In UBC, he will lead the UBC BioProducts Institute, an enabler of the transition to a sustainable bio-based circular economy by using plant-based resources. Nanomaterials, colloids and surfaces form the basis of Prof. Rojas' cross-disciplinary approach to understanding the fundamental principles involved in the design, manufacture and performance of biobased systems.

Source: <http://www.chbe.ubc.ca/2019/10/18/welcome-to-professor-orlando-rojas/>



Dr. Orlando Rojas

# 32nd International Mechanical Pulping Conference



## About the Conference

SUNDAY, JUNE 7 TO WEDNESDAY, JUNE 10, 2020

This biennial conference spearheads discussion and decision making through a convergence of informative panel and lecture sessions on matters that directly affect our industry and jobs in transformative ways. These sessions herald our progress towards a low-carbon bioeconomy, through courses of action that our agro-forest fibre industries choose to contribute to a resource-efficient world.

[www.impc2020.org](http://www.impc2020.org)

© Photo courtesy of Tourism Vancouver

## About the Host

### The University of British Columbia, Vancouver Campus

The University of British Columbia (UBC) is a global centre for research and teaching, consistently ranked among the 40 best universities in the world — and top 20 public universities. Since 1915, the university has embraced innovation and academic rigour.

UBC campuses and operations are located on the traditional, ancestral and unceded territories of the Musqueam people (Point Grey campus), the Musqueam, Squamish and Tsleil-Waututh peoples (downtown Vancouver campus), and the Syilx Okanagan people (Okanagan campus).

*It is our privilege to be your hosts at IMPC 2020.*

THE UNIVERSITY OF BRITISH COLUMBIA  
Faculty of Applied Science



# Registration opens in February 2020.

[IMPC2020.org](http://IMPC2020.org)

# PPC's Local Safety Team

The members of the Pulp and Paper Centre's Local Safety Team (LST) work hard to ensure that the researchers, faculty and staff at PPC can perform their work safely. Our team consists of volunteers from several different areas from within PPC providing diverse knowledge on the varied work environments in the building. Additionally, the LST is supported by the incredible people and resources of the Faculty of Applied Science and UBC's Safety and Risk Services.

Often behind the scenes, LST's mandate is to advise on safe operational procedures, assist and make recommendations on issues concerning workers' safety. This means the LST is involved in safety inspections, assisting with accident or incident investigations, consulting with workers and managerial staff on occupational health and safety issues, making recommendations to improve safety and training, hosting local safety meetings and so much more. The Local Safety Team is critical in promoting a strong safety culture here at PPC. The LST also hears the concerns or ideas from PPC personnel, and LST members can take part in additional training or events to gain and pass on knowledge of workplace safety to the people at PPC.

Moving beyond the local level, the LST also acts as the conduit between the workers at PPC and the Applied Science Joint Occupational Health and Safety Committee (JOHSC). Every month, LST presents our local issues to the JOHSC, gathers concerns and lessons learnt from ten other departments within Applied Science and receives recommendations and broader safety information from the JOHSC. The LST distributes this information at PPC and applies the knowledge to the rest of the LST's responsibilities.

Safety is everyone's responsibility and the Local Safety Team will continue its work to help the people at PPC work safely every day.



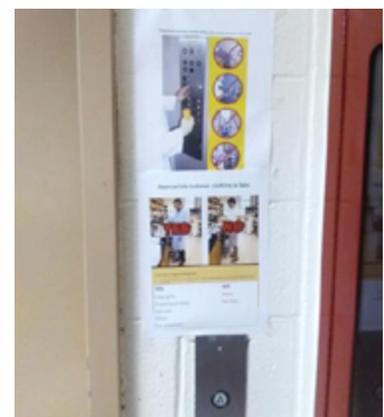
*Helmet and safety glasses at work.*



*Safety mesh embraces open cutting tools.*



*Notices in high-use areas, like the elevator entrance (right) and stair wells and the lunch room. (left)*



# Grad Achievements

**Jingqian Chen** scaled a triumphant milestone in her internal thesis defence of her PhD research on October 7. Her committee comprised her supervisors, Drs. Heather L. Trajano (UBC), Rodger P. Beatson (BCIT), and members Drs. Mark D. Martinez (UBC) and Paul Bicho (Canfor Innovation).

Jingqian's thesis was entitled "Understanding and Modelling Softwood Hemicellulose Hydrolysis and Its Adsorption to Pulp Fibres." Her external defence will be the final step. Almost there, Jingqian!



**Weiyin Li's** internal defence of his doctoral thesis, "Numerical study of a transient bifurcating-flow near slotted apertures" took place on 25 September. Committee members comprised his supervisor, Dr. James Olson and Drs. Mark Martinez and Robert Gooding.

Weiyin's thesis numerically studied the transient flow near slotted apertures inside a pulp screen. The capacity of pressure screen is generally defined as the maximum mass throughput before the apertures plug with pulp. Increased capacity follows from factors that either reduce fiber deposition at the aperture or increase the effectiveness with which fibers are removed.

This thesis considers this latter effect and in particular

the factors that increase the backflush pulse that clears any deposited fibres from the aperture. Three major factors are discussed in this thesis: (1) higher rotor tip speeds and lower slot velocities support longer and higher reversal flows to backflush and clear the apertures, (2) a foil angle-of-attack of 5 degrees generated the longest reversal flow duration and maximum negative pressure pulse, and (3) the maximum reversal velocity was found for an intermediate contour height of 0.9 mm.

The reversal flow time increases with the increasing contour height when the slot velocity is reduced. The study also showed a backflush "flow tunnel" between the vortex and the backside of the wire. When the reversal flow happens, the vortex center would move away from the aperture and the backflush flow tunnel could be found.

# Grad Achievements

**Arthur Rostami** was awarded the DuPont Canada Fellowship in Pulp and Paper in September 2019. The award is given to a graduate student undertaking research related to the industry, and on the recommendation of UBC's Faculty of Graduate and Postdoctoral Studies. The award offers \$5500 over a year

Arthur's research is about further understanding the flow inside paper and press felts, and also the rewetting phenomenon that occurs at the end of the press section of paper-making machines. Such investigation will potentially help paper manufacturers optimize their machines and reduce the operational costs of paper making.



Another doctoral student on a similar path of milestones, is **Masoud Daneshi**. His internal defence took place on 22 October. Masoud's thesis "Understanding the flow of viscoplastic fluids in thin conduits" examined three problems related to the flow.

The first part of his thesis explored the flow behaviour near obstructions in a thin slot. The second part demonstrated wall-slip behaviour in a fully developed Poiseuille flow, and the last part investigated multi-layered flow of miscible liquids with chemical reaction at the interface. His observations suggest that the stability of flow configuration is sensitive to slight inclination angle in case of fully-reacted flow, and confirms that the gel layer grows diffusively along the length of the cell.

Masoud's co-authored article was accepted for publication by the peer-reviewed journal, *Physics Review Fluids* in November.

"Obstructed viscoplastic flow in a Hele-Shaw cell"

M. Daneshi, J. MacKenzie, N. J. Balmforth, D. M. Martinez, and D. R. Hewitt.

<https://journals.aps.org/prfluids/acceptedb9079Yd8Hb61bf61d5460a78f297a7475799c4cc0>

In July, the *Journal of Non-Newtonian Fluid Mechanics* published "Characterising wall-slip behaviour of Carbopol gels in a fully-developed Poiseuille flow."

M. Daneshi, A. Pourzahedi, D. M. Martinez, D. Grecov,

<https://doi.org/10.1016/j.jnnfm.2019.06.003>



# Personnel News

## A farewell

Meaghan Miller, who served as ERMP Program Manager of Phase 2 of the project until October, accepted another appointment at UBC where her new role is Research Development Officer at SPARC. Staff and faculty at ERMP and PPC wish Meaghan the very best.

Welcome to UBC and to PPC



*A sweet farewell for Meaghan Miller*

**Emil Gustafsson** joined the PPC Community in September as BPI's Senior Research Projects Manager connected with the BioAlliance.

What drew you to take on the role of Senior Research Project Manager of BPI?

UBC is a powerhouse in the area of renewable materials and advanced bioproducts and has made several high profile requirements in the area in the last year. To be a part of that team and to work towards new collaborations with industrial and academic partners is an enticing opportunity. The time is right for renewable and sustainable materials, and we have exciting times ahead of us in this research area.

How do challenges in your role make your work interesting?

A challenge for me, but ultimately the biggest opportunity for the BPI, is to inspire and nourish collaboration between professors and groups across the four faculties, and to bring in new industrial collaborators to the BPI family.

How can leverage your international experiences to the best value for BPI?

I have a large network in both the academic and private spheres in the the area of forest-based bioproducts in Europe. I hope that I can use those contacts to create new research collaborations and graduate student exchanges between BPI researchers and European universities, particularly the Swedish Universities and companies which I know the best.

Interview with Emil



If you were guided by one personal motto in your professional life, what would that be?  
Work hard, be curious and seize new opportunities!

Interview with Titichai

## Titichai Navessin, PhD, MBA

Titichai brings 7+ years of experience as manager of two successful pan-Canadian research networks: Automotive Partnership Canada and NSERC Discovery Frontiers. Titichai served as a Research Officer and National Program Coordinator at NRC from 2005 to 2012, where he managed and delivered >\$15M of R&D projects to SMEs and automotive OEMs. He co-founded 2 startups and helped to raise >\$5M of government co-funding to establish a portfolio of R&D projects with active participation from universities and government departments. Titichai holds a PhD in Electrochemistry from SFU and an MBA from UBC Sauder School of Business. When not working, he trains in the combat sport of Brazilian Jiu Jitsu and dedicates some of his time as a volunteer instructor for youth classes.

What specifically attracted you to become Operations Manager of BPI?

BPI has an awesome team of researchers, and UBC provides wonderful supporting staff and infrastructure. This role aligns with my research management interests, and leverages very well with my scientific background in material science and electrochemical clean energy technologies.

What do you see as challenges in your role? How does that challenge make your work interesting?

As a growing institute with progressive plan in the next 5 years, BPI has many initiatives ranging from intra-university to regional and international activities. My role in Operations is quite broad, with many details and moving parts at a given time. The challenge is to manage priorities while getting all the projects completed on-time at the highest quality, using limited resources. This makes my role interesting as I have opportunities to interact with many talented individuals including students and postdocs of diverse backgrounds.

How do you think you can leverage your international experiences to the best value for BPI?

I have several years of experience helping research teams build connections to international networks and creating multi-national initiatives to advance R&D. I served as the managing director of the Catalysis Research for Polymer Electrolyte Fuel Cells network, where we established research cooperation with networks in Germany, UK, Sweden and South Africa. At the fundamental level, we are developing and nurturing great relationships between researchers, students and decision makers who are aligned in their passion and interests. A small group of dedicated people can accomplish amazing things.

If you had one personal motto that reflects your professional life, what would that be?

“Stay young, stay foolish” (Steve Jobs)

# BPI Seminar Series 2019

July to December

**August 22, 2019**

Prof. Guang Yang, Huazhong University of Science and Technology, China

*Functional Modification, Controllable Fabrication and Biomedical Applications of Natural Polymer Hydrogel*



**October 15, 2019**

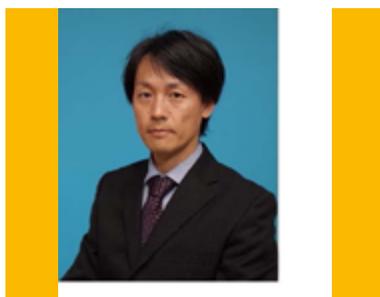
Prof. Johann F Görgens, Department of Process Engineering, Stellenbosch University, South Africa

*Biorefineries for Value-Adding to Sugarcane*



**November 25, 2019**

Prof. Gil Garnier, Chemical Engineering, Monash University, Australia  
*Cellulose here, there, everywhere!*



**December 9, 2019**

Dr. Jumpei Kawada, Research Leader, Polymer Processing and Mechanics Lab, Toyota Central R&D Labs, Nagakute, Japan  
*Super impact absorbing bio-alloys by morphology control for automobiles*





# Researcher Day

## Highlights

**16 September**  
**8:30 a.m. to 3:00 p.m.**

### Keynote presentation

Incoming BPI director and CERC, Prof Orlando Rojas “Back to the future with the forest”. Kaiser Room 2020 was packed for this part of the morning session with standing spots also filled by about 80 participants, BPI-associated faculty members, guests from industry and funding agencies in all.

### Events

Interim BPI director, Dr. Scott Rennecker welcomed the gathering and facilitated the smooth turnout of scheduled events on this day. Graduates and post-doctoral fellows from 19 different research groups in Applied Science, Forestry and Science presented their work.

Students were awarded for their efforts.

#### Top 3 oral presentations

1. Morgan Fetherolf (Eltis group)
2. James Li (Brumer group)
3. Laura Pirro (Bi Group)

#### Top 3 poster presentations

1. Christopher Walters (MacLachlan group)
2. Edward Wang (Trajano group)
3. Oriana Vanderfleet (Cranston group)

# Our Student and Researcher Community at PPC

## Undergraduates

- Bronwyn Berry
- Jordan Mercur
- Zezhong Li

## Graduate students

- Arthur Rostami
- Omid Hajieghrary

## Doctoral students

- Adel Mohammed Redha
- Daniel Paterson
- Hatef Rahmani
- Jingqian Chen
- Lee Rippon
- Long Cheng
- Masoud Daneshi
- MiguelVillalba
- Mohammad Shanb Ghazani
- Nicholas McIntosh
- Sudipta Mitra
- WeiyinLi
- Xiaohe Liu

## Post-doctoral fellows

- Helei Liu
- Jordan Mackenzie
- Lei Zhang
- Ying Xiong

## Visiting scholars

- David Kerres
- Jaehyug Choi
- Junnan Chao
- Ryu Sato
- Xinyan Zhang
- Yi Luo

## Research associate

- Reza Korehei

## Research assistant

- Daniela Figueroa



***Happy Holidays!***



Pulp and Paper Centre