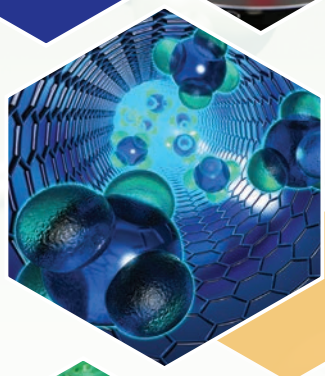
TAPPI NANO DIVISION

Cellulose Nanomaterials Will Contribute to Everyday Life



International Conference on Nanotechnology for Renewable Materials • 2017

5 – 8 June 2017 • Montreal, Québec, Canada
Hyatt Regency Montreal

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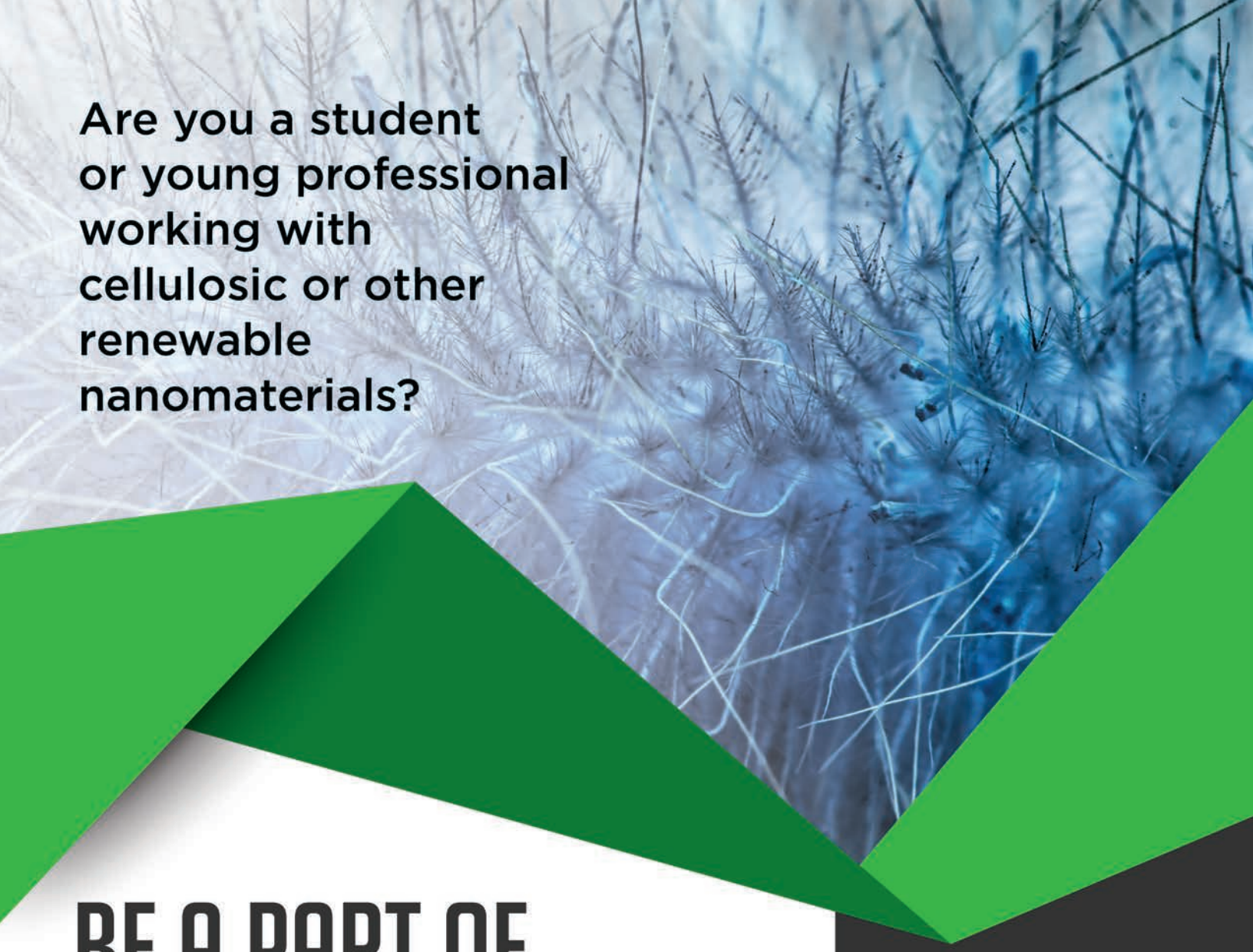

Are you a student or young professional working with cellulosic or other renewable nanomaterials?

BE A PART OF SOMETHING BIGGER THAN NANO...

Help build TAPPI Nano's Global Network for Students and Young Professionals

Visit www.tappinano.org to learn more.

Join the TAPPI Nano Division Student Committee and:

- Connect with students and young professionals around the world
- Share knowledge and ideas to make an impact
- Produce student-led webinars, newsletters, forums and surveys that engage students
- Learn how to transition from academia to industry
- Design and shape events for students at TAPPI's annual Nano conference

Contents

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2017 International Conference on Nanotechnology for Renewable Materials

5 – 8 June 2017
Montreal, Québec, Canada
Hyatt Regency Montreal

TAPPI NANO DIVISION

Dear Colleagues,

Welcome to TAPPI's 2017 International Conference on Nanotechnology for Renewable Materials! We would like to thank you for joining us in Montreal.

We are pleased that this year's program has been extended for a half day and includes over 140 technical presentations on production, characterization, applications and functionalization for renewable nanomaterials. We have a jam-packed program with three concurrent tracks throughout the event with Tuesday afternoon including a time slot with a fourth track! New this year, is our first End Users Panel. The conference includes three keynote presentations, a conference dinner, and the annual Student Poster Competition sponsored by Georgia Tech/RBI. We also hope that you take advantage of the networking opportunities throughout the conference this week.

Many, many thanks go to the research committee, its subcommittees, session chairs, speakers and our sponsors and exhibitors. This is your program and it would not have been possible without your commitment, ideas, time and energy. All of these volunteers have done an outstanding job to make this conference a success.

We hope you find the conference has provided you excellent value and a good investment of your time and energy.

Enjoy the conference and your stay in Montreal.

2017 Conference Co-Chairs:

Jean Bouchard,
FPInnovations

Emily Cranston,
McMaster University

Derek Gray,
McGill University

Tom Lindstrom,
Innventia

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Innventia

Technical Program Planning Committee Chair

Joel Kelly, *BC Research Inc.*,
Technical Program Chair

Conference Highlights

Tour - FPInnovations

Monday, 5 June, 2017 • 8:30am – 11:30am

(Sold Out- Wait List Available)

FPInnovations specializes in the creation of scientific solutions in support of the Canadian forest sector's global competitiveness and responds to the priority needs of its industry members and government partner.

Schedule:

8:30am - Bus departs hotel
9:00am - Tour beings in auditorium with all participants for an overview
9:30am - Groups will tour: aquatic biology, pilot paper machine, refiners, Bio-Sugars, CF, CNC lab, microscopy with expo of bioproducts

11:00am - Tour concludes
11:30am - Arrive at hotel

NEW Student Committee Lunch – Meet Your Mentor/Mentee

Monday, 5 June, 2017 • 12:30pm – 2:00pm

Hosted by the Nano Divisions's Student Committee

Sponsored by: Asylum Research an Oxford Instruments company | Georgia Tech Renewable Bioproducts Institute

(Pre-registration is Required.)

This program is designed to help students, postdocs and young professionals make the most of their conference experience by pairing them with global leaders in renewable materials. This is a fun, informal opportunity for students and young professionals to meet, connect and make an impact. Experts will be paired with young professionals to mentor them during the conference.

NEW Health, Safety, and Environmental Considerations for Bio/Nano Technologies Workshop

Monday, 5 June, 2017 • 1:00pm – 4:00pm

(Separate Registration Required. Member: $160; Nonmember: $220)

Lead Instructor: Jo Ann Shatkin, Vireo Advisors, LLC.

This half-day workshop will focus on the occupational, environmental, and consumer health and safety requirements for new technologies, with a special focus on bio-based nanomaterials. Interactive presentations will explore these issues from the perspectives of data development, risk assessment and management strategies, and regulatory requirements. Presentations, case studies, and discussions will be led by the team from Vireo Advisors, an experienced international advising firm dedicated to advancing the commercialization of safer and environmentally preferable technologies.

NEW ISO TC6 TG1 Meeting

Monday, 5 June, 2017 • 2:00pm – 4:00pm

ISO is an independent, non-governmental international organization with a membership of 164 national standards bodies. The TC6 committee focuses on standardization in the field of paper, board, and pulps and cellulosic nanomaterials (CNM). ISO TC6 TG1 is a task group dedicated to identifying ISO projects related to CNM and reviewing and updating existing ISO standards to include CNM. (Invitation Only)

Young Professionals Mixer

Hosted by the Young Professionals Division

Monday, 5 June, 2017 • 6:30pm – 7:30pm

This event, hosted by TAPPI's Young Professionals Division, is a great opportunity to network with a diverse group of young professionals in a relaxed environment while attending the 2017 TAPPI Nano Conference. This event offers a great way to combine both business and social networking. Enjoy drinks and appetizers with other YP's as well as division representatives. This event is geared toward those who are 30 and under, but is open to all conference attendees.

NEW End Users Panel

Hosted by the End Users Committee.

Tuesday, 6 June, 2017 • 4:00pm – 5:30pm

Moderator: Hamdy Khalil, The Woodbridge Group

Panelists:

- Dr. Kent Nielsen, *3M Canada*
- Dr. Toivo Kodas, *Cabot Corporation*
- Dr. Deborah Mielewski, *Ford Motor Company*
- Dr. Laurent Vidal, *L'Oreal*
- Dr. Valerie Lafitte, *Schlumberger*

TAPPI Nano 2017 features its first-ever End Users Panel. This new session is expected to be of wide interest to scientists and producers alike. Learn about the requirements and issues that the ultimate end user will have when producing commercial products incorporating cellulose nanomaterials.

Poster Session and Student Poster Competition

Coordinated by the Student Committee

Tuesday, 6 June, 2017 • 5:30pm – 7:30pm

Sponsored by: Georgia Tech Renewable Bioproducts Institute

Visit more than 40 presentations which focus on additional applications, characterization and functionalization of cellulose and other renewable nanomaterials. The poster session and student poster competition is held every year at the conference to showcase undergraduate and graduate research. Conference attendees are invited to vote on the student posters in the competition using either a paper ballot or the voting tool in the Conference App. Prizes are awarded to the top poster presenters.

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Conference Highlights

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Research Committee Meeting

(members only)
Wednesday, 7 June, 2017 • 7:30am – 8:20am

Lunch Presentation

Wednesday, 7 June, 2017 • 12:00pm – 2:00pm

Sponsored by: CelluForce

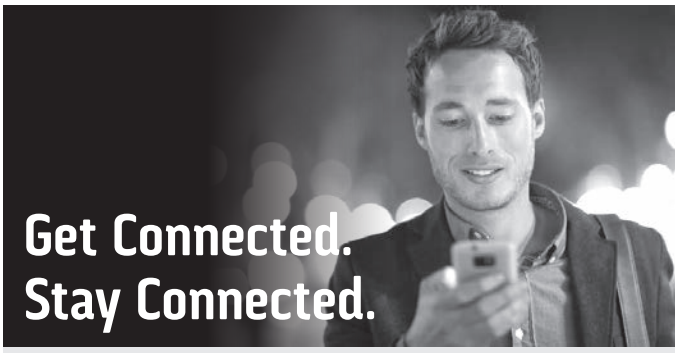
Richard Berry, CelluForce
CelluForce NCC™: Making Its Way Into Commercial Products

Dinner Cruise

Wednesday, 7 June, 2017 • 6:00pm – 11:15pm
(Separate registration and fee required = $100.
Space limited to 150 participants)
Join us on board Cavalier Maxim as we view the lights of Montreal while cruising the Saint Lawrence River. Guests will be impressed by the beauty of the city and its surroundings as well as an exceptional dinner. The nights concludes with a colorful fireworks display.

Schedule:
Bus departs hotel: 6:00pm
(Participants should meet in hotel lobby at 5:45pm)
Cruise Departs: 7:00pm
Arrive back at Pier: 11:00pm
Arrive at hotel: 11:15pm

*Guest tickets are available = $175.
(Guest tickets do not include conference registration.)



Download the App!

All of the Conference info at your fingertips:

All registered attendees can download the free Nano Conference app that has it all. You'll have access to the conference schedule, speaker information, floor plans, and exhibitor details, as well as tools to connect with other participants.

NEW Career Roundtable

Thursday, 8 June • 2:00pm – 3:30pm
Sponsored by the Student Committee
The platform will be comprised of two representatives each from academia, government and industry with a member of the student committee as moderator.

The first 30 minutes will be a presentation from one of the panelists with the second 30 minutes open for Q&A and the final 30 minutes will be dedicated to informal small group discussion where students and young professionals can directly engage with panelists from their job sectors.

Panelists

- Wim Thielemans, *KU Leuven*
- Jeffrey Youngblood, *Purdue University*
- Orlando Rojas, *Aalto University*
- Johan Foster, *Virginia Tech*
- Sean Ireland, *FiberLean*
- Kim Nelson, *American Process*
- Shaul Lapidot, *Melodea*
- Linda Johnston, *National Research Council of Canada*
- Jeffrey Gilman, *National Institute of Standards and Technology*

Post Conference Wrap-Up Meeting

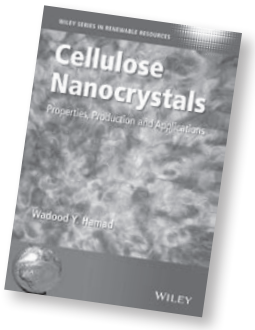
(Invitation Only)
Thursday, 8 June, 2017 5:30pm - 6:30pm

Producers Committee Meeting

(members only)
Friday, 9 June, 2017 • 9:00am – 12:00pm

Cellulose Nanocrystals: Properties, Production and Applications

By: Wadood Y. Hamad
Item Code: 17CELLNANO



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Keynote Speakers

Monday 5 June, 2017 · 4:00pm – 5:30pm
Sébastien Corbeil
President & CEO, CelluForce

Life in a Start-up: CelluForce Experience

About the Speaker:
Sébastien Corbeil is President and CEO of CelluForce. He joined the company in 2015 to speed up the commercialization of nanocrystalline cellulose, an advanced biomaterial extracted from wood fibers. Mr. Corbeil has more than 20 years of international management experience. Prior to joining CelluForce, Mr. Corbeil held several leadership positions with the SUEZ Group in Europe where he developed new products, launched new business units and helped reposition ailing companies. He came back to Canada in 2013 and served as Vice-President for EnGlobe Corp, in charge of a major acquisition project. Mr. Corbeil started his career as a research engineer in Pulp and Paper with industrial gas giant Air Liquide in Chicago. Mr. Corbeil holds a Bachelor's and a Master's degree in chemical engineering from McGill University, as well as a MBA from DePaul University.

Tuesday, 6 June, 2017 · 12:00pm – 2:00pm
Trevor Stuthridge
Executive Vice President, FPInnovations

An Innovation Toolbox to Develop, De-Risk and Deploy World-Leading Nanocellulose Opportunities

About the Speaker:
Dr. Trevor Raymond Stuthridge holds the position of Executive Vice President at FPInnovations, with overall leadership responsibilities for R&D operations, business development and organisational strategy. Dr. Stuthridge has served as a chairperson, director, strategic advisor or executive manager for a broad range of national and international research initiatives and technology commercialisation opportunities relating to sustainable forest management, wood processing innovation, waste utilisation, environmental risk management, biofuels and bioenergy, clean technologies, climate change, and life-cycle assessment. In addition, he has developed and maintained numerous direct collaborations in academic research, government investment, commercial science and innovation. Trevor has a Ph.D. in chemistry from the University of Waikato in New Zealand plus executive qualifications in business management and governance. He also serves as an Adjunct Professor at both University of British Columbia and University of Toronto.

Thursday, 8 June, 2017 · 12:00pm – 2:00pm
Jean-François Levasseur
Director, Innovation, Industry & Indigenous Programs
Natural Resources Canada – Canadian Forest Service

Canada's Innovation System-Producing Nanoproducts with a Macro-effect!

About the Speaker:
Jean-François started his career as a chemical engineer with a variety of operational and managerial roles in Canadian pulp mills, including mill process optimization, bioenergy projects and environmental management systems.

With Environment Canada he assumed executive leadership roles on high profile issues concerning water pollutants, environmental effects monitoring, air contaminants, toxic substances and climate change related regulatory aspects applicable to the Canadian forest products industry.

Since joining Natural Resources Canada in 2009, Jean-François played an integral role around forest industry policy, design and implementation of funding programs supporting the transformation of the forest sector, such as the Pulp & Paper Green Transformation (PPGTP), the Investments in Forest Industry Transformation (IFIT) program, the Forest Innovation Program supporting R&D for transformative technologies and most recently also leads on the implementation of the Indigenous Forestry Initiative.

Together, these programs provided more than $1.3B worth in strategic economic analysis, R&D and capital investments towards energy efficiency improvements, green energy production and the commercialization of innovative transformative technologies, such as advanced bioenergy, biomaterials, biochemicals and next-generation building products across industrial forest products facilities. Many of these first-in-kind projects help further demonstrate where forest biomass can be used to replace fossil fuel based feedstocks in the manufacture of a variety of products such as fuels, chemicals and specialty materials.

Schedule At-a-Glance

Monday 5 June 2017		Tuesday 6 June 2017	Wednesday 7 June 2017	Thursday 8 June 2017	Friday 9 June 2017
			Research Committee Meeting 7:30-8:50 (members only)		
Tour - FPInnovations* 8:30-11:30		Sessions 8:30-10:00	Sessions 8:30-10:00	Sessions 8:30-10:00	Producers Committee Meeting 9:00-12:00 (members only)
		Break • 10:00-10:30	Break • 10:00-10:30	Break • 10:00-10:30	
		Sessions 10:30-12:00	Sessions 10:30-12:00	Sessions 10:30-12:00	
Student Committee Lunch (Pre-registration Required) 12:30-2:00		Keynote Lunch 12:00-2:00 Trevor Stuthridge, FPInnovations	Sponsored Lunch 12:00-2:00 Richard Berry, CelluForce	Keynote Lunch 12:00-2:00 Jean-François Levasseur, Canadian Forest Service	
EHS Workshop* 1:00-4:00	ISO TC6 TG1 2:00-4:00	Sessions 2:00-3:30	Sessions 2:00-3:30	Sessions 2:00-3:30	
		Break • 3:30-4:00	Break • 3:30-4:00	Break • 3:30-4:00	
Opening Keynote Sébastien Corbeil, CelluForce Welcome & Nano Division Overview 4:00-5:30		Sessions 4:00-5:30	Sessions 4:00-5:30	Sessions 4:00-5:30	
Welcome Reception 5:30-7:00		Poster Session and Student Poster Competition		Post Conference Wrap-Up Meeting 5:30 - 6:30	
	YP Mixer 6:30-7:30		Conference Dinner* 6:00-11:15		

*additional registration fee required.

Technical Program

Subject to change. For the most up-to-date program information, visit conference.tappinano.org

Monday, 5 June 2017

8:30-11:30	**Tour of FPInnovations**	
12:30-2:00	**Student Committee Lunch** (open to all students; pre-registration required) 12:30-2:00 • *Room: Creation*	
1:00-4:00	**EHS Workshop** 1:00-4:00 • *Room: Symphonie I*	**ISO TC6 TG1 Meeting** 2:00-4:00 • *Room: Symphonie II*
4:00-5:30	**Session 1: OPENING SESSION AND KEYNOTE** **Keynote Speaker: Sébastien Corbiel, CelluForce** **Life in a Start-up: CelluForce Experience** **Welcome & Nano Division Overview** 4:00-5:30 • *Room: Grand Salon Opera ABC*	
5:30-7:00	**Welcome Reception** 5:30-7:00 • *Room: Grand Salon Opera Foyer*	
6:30-7:30	**Young Professionals Mixer** 6:30-7:30 • *Room: Terrace des Festivals*	

Technical Program

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Tuesday, 6 June 2017

8:30 - 10:00	**Session 2: Industrial Application Testing** *Session Chair: Alan Rudie, USDA Forest Products Laboratory* *Room: Grand Salon Opera A*	**Session 3: Self or Directed Assembly of Cellulose Nanocrystals** *Session Chair: Agne Swerin, RISE Research Institutes of Sweden and KTH Royal Institute of Technology* *Room: Grand Salon Opera B*	**Session 4: Emulsions** *Session Chair: Carole Fraschini, FPInnovations* *Room: Grand Salon Opera C*
8:32	Application of Cellulose Nanocrystals in Oilfield Gravel Packing Fluid - *Valerie Lafitte, Schlumberger*		Polymer Graft-Modified CO_2 Switchable Cellulose Nanocrystals Prepared by Living Radical Polymerization and Their Use as Pickering Emulsifiers - *Joe Glasing, Queen's University*
8:54	Filtration and Rheological Properties of Wyoming Clay-Water Based Drilling Fluids with Cellulose Nanocrystals (CNC) - *Yaman Boluk, University of Alberta*	Controlling the Deposition Pattern of Cellulose Nanocrystals in Drying Droplets Using Internal Flow Fields - *Wim Thielemans, KU Leuven*	Investigation of the Formation Mechanisms in High-Internal Phase Pickering Emulsions Stabilized by Cellulose Nanocrystals - *Wadood Y. Hamad, FPInnovations*
9:16	Cellulose Nanofibres for Sulphate Resistance in Cement Based Systems - *Vivek Bindiganavile, University of Alberta*	Formation of the Liquid Crystalline Phase in Sulfuric Acid Derived Cellulose Nanocrystal Suspensions - *Christina Schütz, KU Leuven*	Emulsions Stabilized by Cellulose Nanofibrils: Effect of Surfactant and Electrolyte in Phase Transitions - *Mariko Ago, Aalto University*
9:38	Microfibrillated Cellulose Outside of the Box - *Per Svending, FiberLean Technologies Ltd.*	Cellulose Nanocrystal Surface Charge Influences Self-Assembly and Rheology - *Tiffany Abitbol, The Hebrew University of Jerusalem*	Tailoring Cellulose Nanocrystal Surface Chemistry for Emulsion Polymerization Systems - *Stephanie Kedzior, McMaster University*
10:00 - 10:30	**BREAK IN THE GRAND SALON OPERA FOYER**		
10:30-12:00	**Session 5: Sustainability in Applications** *Session Chair: Benzhad Ahvazi, Innotech Alberta* *Room: Grand Salon Opera A*	**Session 6: Colloidal Interactions in Cellulose Nanomaterials** *Session Chair: Tiffany Abitbol, The Hebrew University of Jerusalem* *Room: Grand Salon Opera B*	**Session 7: Foams and Aerogels** *Session Chair: Orlando Rojas, Aalto University* *Room: Grand Salon Opera C*
10:32	Can Polyurethanes Benefit from the Incorporation of Cellulose Nanocrystals? A Review of The Current Literature - *Sassan Hojabr, CelluForce*	Acid Dissociation of Surface Bound Water on Cellulose Nanofibrils: Calcium Carbonate Nanoparticle Probe Under the Application of Ultralow Shear - *Patrick Gane, Aalto University/Omya International AG*	Novel Biobased Micro- and Nanomaterials in Porous Foam Formed Structures - *Katariina Torvinen, VTT Technical Research Centre of Finland Ltd.*
10:54	Antimicrobial Activity of Liquid Flame Spray (LFS) Deposited Nanoparticles on Natural Fibre Based Substrates - *Jarkko J. Saarinen, Åbo Akademi University*	Comparing Approaches to Increasing Adhesion Between Wet Cellulose Surfaces - *Robert Pelton, McMaster University*	
11:16	Ultrastrong Flexible and Conducting Laminated Bionanocomposites from Cellulose Nanocrystals - *Vladimir Tsukruk, Georgia Institute of Technology*	Colloidal Chemical Properties of Cellulose NanoFibrils (CNFs)- Accepted Knowledge, New Boundary Conditions and Challenges - *Lars Wågberg, Fibre Technology, Royal Institute of Technology KTH*	Cellulose Nanocrystals with Methylcellulose as a Co-Stabilizer for Pickering Emulsions, Gels, Oil Powders and Aqueous Foams - *Emily Cranston, McMaster University*
11:38	A Life Cycle Assessment of Automotive Plastics Reinforced with Lignin-Coated Nanocellulose Fibrils - *David R. Shonnard, Michigan Technological University*	Investigation of Iridescent Behavior of Chiral Nematic Cellulose Nanocrystal Film in Response to Controlled Humidity and Temperature - *Nattinee Bumbudsanpharoke, Yonsei University*	Cellulose Aerogels with Tunable Hydrophilicity-Hydrophobicity via Facile Self-Assembling, Gelation and Crosslinking - *You-Lo Hsieh, University of California, Davis*
12:00 - 2:00	**Session 8: Keynote Presentation and Lunch** **Keynote Speaker: Trevor Stuthridge, FPInnovations** ***An Innovation Toolbox to Develop, De-Risk and Deploy World-Leading Nanocellulose Opportunities*** ***Room: Soprano B***		
2:00-3:30	**Session 9: New & Emerging Infrastructure Applications** *Session Chair: Robert Moon, USDA Forest Service* *Room: Grand Salon Opera A*	**Session 10: Fundamentals of Cellulose Nanomaterial-Water Interactions** *Session Chair: Jean Bouchard, FPInnovations* *Room: Grand Salon Opera B*	**Session 11: Mechanisms and Fundamentals** *Session Chair: Wadood Y. Hamad, FPInnovations* *Room: Grand Salon Opera C*
2:02	Cationic Cellulose Nanocrystals as Effective and Trigger-Responsive Flocculants for Harvesting of Chlorella Vulgaris Microalgae - *Wim Thielemans, KU Leuven*	Development of CF Dispersion Methods – Lab Scale - *Xujun Hua, FPInnovations*	Passivation and Control of Protein Affinity of Bioactive Nanocellulose - *Orlando Rojas, Aalto University*

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Technical Program

Subject to change. For the most up-to-date program information, visit conference.tappinano.org

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Tuesday, 6 June 2017

2:24	Fire Retardant Nanocellulose-Based Coatings - *Mikko Tuominen, Research Institutes of Sweden, RISE Bioscience and Materials/Chemistry Materials and Surfaces*	Investigation of the Effect of Spray-Drying Processing Parameters and Surface Chemistry on CNC Redispersibility - *Carole Fraschini, FPInnovations*	Probing Interactions in Nanocellulose and Sugars Using Rheology - *Agne Swerin, RISE Research Institutes of Sweden and KTH Royal Institute of Technology*
2:46	Cellulose-Clay Synergy Effects in Multifunctional Hybrid Composites - *Lars Berglund, KTH Royal Institute of Technology*	Understanding Cellulose Nanocrystal Interactions and Dispersibility as a Function of Surface Chemistry - *Michael Reid, McMaster University*	Designer Molecules for One-step Modification of Cellulosic Materials through the Triazine Chemistry - *Jose Moran-Mirabal, McMaster University*
3:08	CF/Gypsum Paper Sheets: A Tech. Platform to Manufacture Lightweight, Flame Retardant and Strong Gypsum Panels - *Yuxia Ben, FPInnovations*	Dielectric Properties and Moisture Uptake in Cellulose Nanocrystals Films - Characterization of Water Confinement - *Jan Obrzut, National Institute of Standards and Technology (NIST)*	Tuning Surface Modification of Cellulose Nanocrystals to Maximize Catalytic Activity - *Nathan Ellebracht, Georgia Institute of Technology*
3:30 - 4:00	**BREAK IN THE GRAND SALON OPERA FOYER**		
4:00-5:30	**Session 12: End Users Panel Discussion** *Moderator: Hamdy Khalil, Woodbridge Foam Corporation Room: Grand Salon Opera A*	**Session 13: Cellulose Nanomaterial Self-Standing Films** *Session Chair: Julien Bras, Grenoble INP Pagora - LGP2 Room: Grand Salon Opera B*	**Session 14: Functional Materials** *Session Chair: Yaman Boluk, University of Alberta Room: Grand Salon Opera C*
4:02	Panelists Include: • *Dr. Kent Nielsen, 3M Canada* • *Dr. Toivo Kodas, Cabot Corporation* • *Dr. Deborah Mielewski, Ford Motor Company* • *Dr. Laurent Vidal, L'Oreal* • *Dr. Valerie Lafitte, Schlumberger*	Spray Coating – A Rapid Method for Preparation of Free-Standing Nanocellulose Film - *Swambabu Varanasi, Monash University*	Cellulose Inks for 3D Printing and Their Rheology - *Michael Hausmann, Empa, Swiss Federal Laboratories for Materials Science and Technology, Applied Wood Materials Laboratory/ETH Zürich*
4:22		Use of Chromatogeny for the Development of Hydrophobic MFC Films - *David Guérin, Centre Technique du Papier*	Structure-Process-Property Relationships in Extrusion Based Additive Manufacturing of Cellulose Nanocrystal Composites- *Michael Bortner, Virginia Tech*
4:46		Nanocellulose Based Self-Standing Films for Water Purification and Softening - *Vanja Kokol, University of Maribor*	In-Situ Polymerized Cellulose Nanocrystals (CNC) – Poly(L-lactide) (PLLA) Nanomaterials and Applications in Nanocomposite Processing - *Chuanwei Miao, FPInnovations*
5:02		Improvement of the Physical and Mechanical Properties of Lignocellulose Nanofibrils (LCNF) Films Through Hybridization - *Mehdi Tajvidi, University of Maine*	Performance Comparison Study of Different Cellulose Nanofiber Suspensions to Stabilize Pigment - *Seema Saini, University Grenoble Alpes - LGP2*
5:30 - 7:30	**Session 15: Poster Session and Student Poster Competition** ***Room: Grand Salon Opera Foyer***		

Technical Program

Subject to change. For the most up-to-date program information, visit conference.tappinano.org

Wednesday, 7 June 2017

7:30 - 8:20	**Research Committee Meeting (Members Only)** ***Room: Imagination***		
8:30-10:00	**Session 16: Cellulose Nanomaterials for the Pulp and Paper Industry** *Session Chair: Warren Batchelor, BioProcessing Research Institute of Australia, Department of Chemical Engineering, Monash University* *Room: Grand Salon Opera A*	**Session 17: Photonics and Catalysts** *Session Chair: Joel Kelly, BC Research Inc.* *Room: Grand Salon Opera B*	**Session 18: Production of Cellulose Nanomaterials** *Session Chair: Derek Gray, McGill University* *Room: Grand Salon Opera C*
8:32	An Example of the Creation and Use of MFC (Micro-Fibrillated Cellulose) in Today's Specialty Papers Market - *Ken Schelling, GL&V USA Inc.*	Cellulose Nanocrystals as Non-innocent Catalysts Supports and Chiral Inducers - *Audrey Moores, McGill University*	Nanocellulose Derivatives – A Comparative Study Between Wood- and Vegetable-Based Raw Materials - *Antti Laukkanen, Betulium*
8:54	Forming a Cellulose Based Nanopaper Using XPM- *Zoheb Karim,* *MoRe Research Örnsköldsvik AB*	Lignocellulosic Micro- and Nanomaterials as Copper Frames for the Evaluation of the Copper (I) Catalyzed Azide-Alkyne Cycloaddition (CuAAC) - *Gloria Oporto, West Virginia University*	Production of Lignin Containing Cellulose Nanomaterials from Wood Chips - A Scale-Up Study - *J.Y. Zhu, USDA Forest Service, Forest Products Laboratory*
9:16	Scale Up of Nanocellulose/ Hybrid Inorganic Films Using a Pilot Web Former - *Daniele Oliveira de Castro, MoRe Research*	Diameter Varying Electro-Spun CNC Composite Nanofiber Study - *Ling-Chih Chen, National Tsinghua University*	Production of Cellulose Nanocrystals from Pre-Hydrolyzed Substrates - *Eero Kontturi, Aalto University*
9:38	Strengthening and Drying of Board Structures Containing Nanocellulose Materials - *Jani Lehmonen,* *VTT Technical Research Centre of Finland Ltd.*	Cellulose Nanocrystal Templating of Semiconducting Polymers for Optoelectronic and Photonic Devices - *Bailey Risteen, Georgia Institute of Technology*	Pineapple Cellulose Nanocrystals (CNC) Film by Casting Continuous - *Pedro Ivo Cunha Claro, University of São Carlos*
10:00 - 10:30	**BREAK IN THE GRAND SALON OPERA FOYER**		
10:30-12:00	**Session 19: Functionality via Surface Modification of Cellulose Nanomaterials** *Session Chair: Christina Schütz, KU Leuven* *Room: Grand Salon Opera A*	**Session 20: Printed Electronics and Storage Devices** *Session Chair: Wadood Y. Hamad, FPInnovations* *Room: Grand Salon Opera B*	**Session 21: New Products and Processes** *Session Chair: Carole Fraschini, FPInnovations* *Room: Grand Salon Opera C*
10:32	Nanocelluloses Towards New Functions - *Olli Ikkala, Aalto University*	Cellulose Nanofibrils: A Multifunctional 1D Building Block for Flexible Paper Batteries - *Sang-Young Lee, Ulsan National Institute of Science and Technology*	Nanocellullose Morphologies Control Through Drying Process - *TriDung (TD) Ngo, InnoTechAlberta*
10:54	Composite Cholesteric Nanocellulose Films with Enhanced Mechanical Properties - *Brandon Vollick, University of Toronto*	Sustainable Cellulose-Containing Inks for Printed Electronics on Paper Substrates - *Luis Pereira, CENIMAT/I3N, Universidade NOVA de Lisboa and CEMOP/UNINOVA*	Strategic Development for Pilot Plant Optimization of Cellulose Nanocrystals (CNC) Production - *Christophe Danumah, InnoTechAlberta*
11:16	Will Silicones Increase the Value of Lignin and Cellulose? - *Michael Brook, McMaster University*	Functionalized Nanocellulose-Integrated Hetero-layered Nanomat Separators: From Renewable Resources to Sustainable Energy Storages - *Jung-Hwan Kim, Ulsan National Institute of Science and Technology*	An Overview of CNC Manufacturing Cost, Guidelines for Research Opportunities Based on Cost and Financial Risks Analysis - *Camilla Abbati de Assis,* *North Carolina State University*
11:38	Superhydrophobic and Slippery Lubricant-Infused CNF Nanocellulose Films by Photoinduced Thiol - Ene Coupling - *Jlaqi Guo, Aalto University*		Feasible Application of Hydrophobicity in Amphiphilic ACC-Nanocellulose Created by Aqueous Counter Collision (ACC) - *Tetsuo Kondo, Kyushu University*
12:00 - 2:00	**Session 22 - Lunch with Presentation by *Richard Berry, CelluForce*** **CelluForce NCC™: Making Its Way Into Commercial Products** ***Room: Soprano AB***		

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Subject to change. For the most up-to-date program information, visit conference.tappinano.org

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Wednesday, 7 June 2017

2:00-3:30	**Session 23: Cellulose Nanomaterial Based-Coatings** *Session Chair: Anne Dorris, FPInnovations* *Room: Grand Salon Opera A*	**Session 24: Tissue Engineering and Implants** *Session Chair: Michael Hausmann, Empa, Swiss Federal Laboratories for Materials Science and Technology, Applied Wood Materials Laboratory/ ETH Zürich • Room: Grand Salon Opera B*	**Session 25: Sols and Gels** *Session Chair: Michael Bortner, Virginia Tech* *Room: Grand Salon Opera C*
2:02	Improved Performance of Water-Based Inks on Plastic Films with Thin CNC Coating - *Joseph Aspler, FPInnovations*	CNF Hydrogels for Tissue Engineering: Interactions Between Fibroblasts and CNF with Two Different Surface Chemistries - *Kristin Syverud, Paper and Fibre Research Institute*	Injectable Fluorescent Hydrogel Formed by Cellulose Nanocrystals and Graphene Quantum Dots - *Amir Khabibullin, University of Toronto*
2:24	Strength and Barrier Enhancement of Paperboards Properties with Cellulose Nanofibrils Applied by Blade Coater - *Douglas Bousfield, University of Maine*	Injectable Cellulose Nanocrystal Hydrogels as a Platform for Functional Tissue Engineering Applications - *Kevin De France, McMaster University*	Unique Aspects of TEMPO-Oxidized Cellulose Nanofibril/Mixed-Linkage - Glucan Nionanocomposite Gels - *Suvi Arola, University of British Columbia*
2:46	Substrate Requirements for Roll-to-Roll Processed Nanocellulose Coatings - *Vinay Kumar, Åbo Akademi University*	Cross-Linked Cellulose Aerogels for Bone Scaffolding Applications - *Daniel A. Osorio,* *McMaster University*	Investigating Cellulose Nanocrystals (CNC) as Oil Well Cement Additive and Its Mechanisms of Action - *Yaman Boluk, University of Alberta*
3:08	Characteristics of CNF and PVA Suspension Depending on Mixing Ratio - *Hye Jung Youn,Seoul National University*	Implantable Nanocomposite Materials - *E. Johan Foster, Adolphe Merkle, Institute/Virginia Tech Center for Sustainable Nanotechnology (VTSuN) Virginia Tech*	Surfactant Modified Cellulose Nanofibrils for Enhanced Oil Recovery - *Trygve D. Jakobsen,* *Norwegian University of Science and Technology*
3:30 - 4:00	**BREAK IN THE GRAND SALON OPERA FOYER**		
4:00-5:30	**Session 26: Packaging** *Session Chair: David Skuse, FiberLean Technologies Ltd.* *Room: Grand Salon Opera A*	**Session 27: Wound Dressings and Drug Delivery** *Session Chair: Kristin Syverud, Paper and Fibre Research Institute, NTNU* *Room: Grand Salon Opera B*	**Session 28: Filaments and Threads** *Session Chair: Yaman Boluk, University of Alberta* *Room: Grand Salon Opera C*
4:02	Cellulose Nanomaterials - Multilayer Films as Oxygen Barrier - *Jinwu Wang, Forest Products Laboratory*		Spinning a Yarn: Cellulose Fibres Spun from Solution - *Stephen Eichhorn, University of Exeter*
4:24	Novel In-Situ Precipitation Concept to Prepare Green Barrier Materials - *Swambabu Varanasi, Monash University*	Cellulose-Based Biosensors for Enzyme Detection - *Harry Brumer, University of British Columbia*	Filaments of Cellulose Nanofibrils via Hydrogel Spinning - *Meri Lundahl, Aalto University*
4:46	Engineering Photocatalytic Nanocellulose - TiO_2 paper: Effect of Structure and Nanoparticle Aggregation State - *Warren Batchelor, BioProcessing Research Institute of Australia, Department of Chemical Engineering, Monash University*	Cellulose Nanofibrils Chemical Surface Modification for Monitoring Drug Release in Tissue Engineering - *Julien Bras, University Grenoble Alpes - LGP2/Grenoble INP*	CF in Textile Applications - *Annie Dorris, FPInnovations*
5:08	Measuring the Oil and Grease Barrier Properties of MFC Coated Paper - *Jörg Padberg,* *Munich University of Applied Sciences*	Poly(amidoamine) Dendrimers as a Platform to Obtain Complex and Multifunctional Magnetic Nanoparticle Based Structures - *Adriano Boni, Universitè de Fribourg*	Anisotropy Determination During Assembly of Nanocellulose Fibrils into a Gel Thread - *Karl Håkansson, RISE Bioeconomy*
6:00 - 10:00	**Conference Dinner** **6:00-11:15** **Meet in Hotel Lobby at 6:00pm for bus transportation**		

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Thursday, 8 June 2017

8:30-10:00	**Session 29: New Metrology Methods for Cellulose Nanomaterials** *Session Chair: Jeremiah Woodcock, National Institute of Standards and Technology* *Room: Grand Salon Opera A*	**Session 30: Updates from Producers** *Session Chair: Benzhad Ahvazi, Innotech Alberta* *Room: Grand Salon Opera B*	**Session 31: Infrastructure** *Session Chair: Keith Gourlay, Performance BioFilaments* *Room: Grand Salon Opera C*
8:32	Fluorescence Lifetime Imaging of CNC-Epoxy Composites - *Sindhu Seethamraju, National Institute of Standards and Technology*	Progress Towards Nanocellulose Commercialization - *Kim Nelson, American Process*	Lignocellulose Nanofibrils (LCNF) a Viable Low-Cost Alternative to Cellulose Nanofibrils in Binder Applications: Effect on Physico-Mechanical Properties of Resin-Free Medium Density Fiberboards (MDF) - *Mehdi Tajvidi, University of Maine*
8:54	Xyloglucan Adsorption as a Method to Measure Surface Area for Never Dried Cellulose Nanofibers - *Carl Moser, Royal Institute of Technology KTH & Valmet AB*	New Transition Metal Catalyzed Oxidative CNC Production Method - *Sean McAlpine, Blue Goose Biorefineries Inc.*	Cellulose Filaments Reinforcement of Wood Fibre Insulation Boards - *Yaolin Zhang, FPInnovations*
9:16	Dye-Labeled CNCs for Monitoring CNC Distribution - *Linda Johnston, National Research Council Canada (NRC)*	Mineral/ Microfibrillated Cellulose Composite Materials: Next Generation Products, New Applications and Product Forms - *David Skuse, Fiberlean Technologies Ltd.*	High Performance Cement via Cellulose Nanocrystal Addition - *Jeffrey P. Youngblood, Purdue University*
9:38	Interactions and Layer Properties of Nanocellulose using Multi-Parametric Surface Plasmon Resonance - *Annika Jokinen, BioNavis Ltd.*	Melodea Cellulose Nano Crystals (CNC) Production and Product Development - *Shaul Lapidot, Melodea Ltd.*	Cementitious Material Reinforced with Thermomechanical Pulp (TMP) and Nanofibrillated Cellulose (NFC) - *Tomo Kakitani, Sumitomo Forestry Ltd.*
10:00 - 10:30	**BREAK IN THE GRAND SALON OPERA FOYER**		
10:30-12:00	**Session 32: Intrinsic Properties Measurement (CNCs)** *Session Chair: Stephanie Beck, FPInnovations* *Room: Grand Salon Opera A*	**Session 33: Workplace Safety: From Research to Practice** *Session Chair: Heli Kangas, VTT Technical Research Centre of Finland Ltd.* *Room: Grand Salon Opera B*	**Session 34: Composites – Solvent Based Processing** *Session Chair: Douglas Fox, American Univeristy* *Room: Grand Salon Opera C*
10:32	Crystallinity of CNCs by Raman, NMR, and XRD - *Umesh Agarwal, USDA Forest Service, Forest Products Laboratory*	Occupational Health and Safety Characterization of Several North American Cellulose Nanocrystals - *Steven Ellis, FPInnovations*	
10:54	Analyzing Process Parameter Interaction on Acid Hydrolysis Production of Cellulose Nanocrystals - *Michael Bortner, Virginia Tech*	Global Activities of Cellulose Nanomaterial Environmental Health and Safety - Opportunities for Collaboration - *Kimberly Ong, Vireo Advisors LLC*	*Cellulose Nanocrystal/Polymer Nanocomposites for Adhesive Applications -* *Alexandra Ouzas, University of Ottawa*
11:16	Self-Assembled Cellulose Nanocrystal Blends for Tough Bioinspired Composites - *Bharath Natarajan, National Institute of Standards and Technology and Georgetown University*	Advances in the Occupational Health and Safety Practices of Nanomaterials - *James Ede, Vireo Advisors LLC*	Alternatives to Drying and to Low-Solids Processing of Cellulose Nanomaterials - *Ronald Sabo, USDA Forest Service, Forest Products Laboratory*
11:38	Beyond Buckling: Studying the Mechanical Properties of Cellulose Nanocrystal-Based Films - *Urooj Gill, McMaster University*	Establishing the Safety of Cellulose Nanomaterials for Food Related Uses - *Jo Anne Shatkin, VireoAdvisors LLC*	Morphology and Mechanical Properties Electrospun Polystyrene Fibers Containing Cellulose Nanocrystals (CNC) Modified with Various Functional Groups - *Mahsa Kalantari, University of Alberta*
12:00 - 2:00	**Session 35: Keynote Presentation and Lunch** **Keynote Speaker: Jean-François Levasseur, Canadian Forest Service** **Canada's Innovation System – Producing Nanoproducts with a Macro effect!** ***Room: Soprano AB***		

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Thursday, 8 June 2017

2:00-3:30	**Session 36: Quantitative Property Control for Cellulose Nanofibril Production** *Session Chair: Sindhu Seethamraju, National Institute of Standards and Technology* *Room: Grand Salon Opera A*	**Session 37: Cellulose Nanomaterial Product Development** *Session Chair: Jo Anne Shatkin, Vireo Advisors, LLC* *Room: Grand Salon Opera B*	**Session 38: Composites – Melt & Dry Processing** *Session Chair: John Simonsen, Oregon State University* *Room: Grand Salon Opera C*	**Session 39: Student Session: Career Roundtable** *Session Chair: Stephanie Kedzior, McMaster University* *Room: Soprano C*
2:02	Understanding Longitudinal Wood Fiber Ultra-Structure for the Production of Cellulose Nanofibrils Using Disk Milling with Dilute Acid Prehydrolysis - *J.Y. Zhu, USDA Forest Service, Forest Products Laboratory*		Cellulose Nanofibrils Enhanced Polypropylene Composites for Fused Filament Fabrication: Nonisothermal Crystallization Kinetics and Thermal Expansion - *Lu Wang, University of Maine*	Hosted by the Nano Student Committee • *Wim Thielemans, KU Leuven* • *Jeffrey Youngblood, Purdue University* • *Orlando Rojas, Aalto University* • *E. Johan Foster, Virginia Tech* • *Sean Ireland, FibreLean Technologies Ltd.* • *Kim Nelson, American Process* • *Shaul Lapidot, Melodea Ltd.* • *Linda Johnston, National Research Council of Canada (NRC)* • *Jeffrey Gilman, National Institute of Standards and Technology*
2:24	What is the Difference Between Different Cellulose Nanofibrils? The Quality Index - *Johanna Desmaisons, University Grenoble Alpes*	Challenges for the Commercialization of Cellulose Nanofibers (CNFs) - *Makoto Arai, Nippon Paper Industries Co., Ltd.*	Reactive Extrusion of Hydrophobic Polymer with Nanocellulose Filler for Improved Mechanical Properties - *Nirup Nagabandi, Essentium Materials*	
2:46	Optimization of the Reaction Conditions of TEMPO-Mediated Oxidation and the Fibrillation Process for the Production of Nanofibrillated Cellulose from Rice Hulls - *Guido de Titto, National Institute of Industrial Technology (INTI)*	Cellulose Nanomaterials: The Road to Commercialization - *Jack Miller, Market-Intell LLC*	Processing Strategies for Incorporating Cellulose Nanocrystals in a Commercially Available Semicrystalline Thermoplastic - *Matthew Orr, Georgia Institute of Technology*	
3:08	Fluorogenically Modified Cellulose Nanofibrils - *Jeremiah Woodcock, NIST*	Risk Assessment of Polymer Composites Containing Cellulose Nanofibrils (CNF) - Considerations of Industrial Production - *Heli Kangas, VTT Technical Research Centre of Finland Ltd.*	Development of the Continuous Production Process "Kyoto Process" of CNF Reinforced Plastics - *Hiroyuki Yano, Kyoto University*	
3:30 - 4:00	**BREAK IN THE GRAND SALON OPERA FOYER**			
4:00 - 5:30	**Session 40: Production and Characterization of Cellulose Nanomaterials** *Session Chair: Bharath Natarajan, National Institute of Standards and Technology & Georgetown University* *Room: Grand Salon Opera A*	**Session 41: Standards and International/ Commercial Measurement Needs** *Session Chair: Stephanie Beck, FPInnovations* *Room: Grand Salon Opera B*	**Session 42: Composites – Reactive Processing** *Session Chair: Ronald Sabo, USDA Forest Products Laboratory* *Room: Grand Salon Opera C*	
4:02	Indigenous Bacterial Nanocellulose - *Lola Vars, Oregon State University*	Standards for Measurement and Specification of Cellulose Nanomaterials - *Brian Haydon, CSA Group*	Reducing Water Absorption in Cellulose Nanocrystal – Epoxy Composites - *Douglas Fox, American University*	
4:24	Mechanochemical Phosphorylation of Cellulose Nanocrystals with Solid Phosphorylating Reagents - *Blaine Fiss, McGill University*	Survey of Measurement Methods for CNC's - *Jeffrey W. Gilman, NIST*	Epoxies Can Solve Moisture Problems in Nanocellulose Materials - *Lilian Medina, KTH Royal Institute of Technology*	
4:46		On the Importance of Size Characterisation of Commercial Grades of Microfibrillated Cellulose - *Per A. Larsson, KTH Royal Institute of Technology*	Graft Modification of Cellulose Nanocrystals with CO_2-Responsive Polymers via Controlled/Living Radical Polymerization - *Omar Garcia-Valdez, Queen's University*	
5:08	Cellulose Nanofibril (CNF) Metrology - *Mahyar Mazloumi, National Research Council of Canada (NRC)*	Development of an Online Analyzer for Characterizing Cellulose Filaments - *Natalie Pagé, FPInnovations*	Effect of Nanocellulose Type and Surface Functionalization on Nanocellulose Coated Glass Fiber Reinforced Polyester Composite - *Joyanta Goswami, Georgia Institute of Technology*	
5:30 - 6:30	**CONFERENCE CONCLUDES: POST CONFERENCE WRAP-UP MEETING** *(Invitation Only)* • Room: Symphonie 4			

Friday, 9 June 2017

9:00-12:00	**Producers Committee Meeting (Members Only)** *Room: Symphonie I*

Nanotechnology Division Awards

This year's awards will be presented on Monday, 5 June, 2017 during the opening session.

International Nanotechnology Division Award and FiberLean® Technologies Prize

Hiroyuki Yano, Professor, Kyoto University

Born in Nagano Prefecture, Japan, Dr. Yano graduated from the School of Agriculture, Department of Forestry and Wood Science, Kyoto University in 1982. In 1986, after leaving the doctoral program at Kyoto University's graduate school, he began working for the Kyoto Prefectural University's Faculty of Agriculture, becoming a lecturer at the university in 1992. In 1998 he joined the Kyoto University Wood Research Institute as an assistant professor, and became a professor at the University's Research Institute for Sustainable Humanosphere in 2004. He was a president of Japan Nanocellulose Forum from 2014 to 2016.

Major Awards and Honors

- 1989 Young Scientist Award, Japan Wood Research Society
- 2005 Hayashi Jisuke Award, The Cellulose Society of Japan
- 2008 International Academy of Wood Science Fellow
- 2009 Japan Wood Research Society Award, Japan Wood Research Society
- 2016 37th Honda Prize

International Nanotechnology Division's Leadership and Service Award

Sean P. Ireland, Vice President Business Development • FiberLean Technologies Ltd.

Sean Ireland is Vice President Business Development for FiberLean Technologies Ltd. He has over 30 years' experience in electronics, electrical engineering and process control from the military to industrial manufacturing; however, his real desire is in growing new technologies through passion and motivation. Over a decade ago, his interest shifted to the physical and surface sciences of nano-scale technologies with a focus on cellulosic nanomaterials. During the past decade, Sean has delivered multiple keynote presentations on nanotechnology to diverse audiences across the globe, striving to motivate them to work with these new materials. Additionally, Sean has been integral in working with multiple government agencies to obtain federal funding for critically needed nanocellulosics research and development.

Prior to working for FiberLean Technologies, he served in the U.S. military where he started as a non-commissioned officer working with many weapons platforms. In the late 1980's, Sean received his officer commission and in 1990 his flying wings. He then went on to fly the F-16 Fighting Falcon. Later, Sean was appointed as the Commander of the 174th Forward Operating Location (FOL) located at 10th Mountain Division, Fort Drum, New York, until accepting a position within the pulp and paper industry.

While working for Champion International, International Paper and Verso Paper, he is credited with patents and applications in neural modeling, non-linear systems, control algorithms, specialty paper and coating formulations. He has authored or co-authored several technical papers on non-linear systems and nanocellulose technology and the vision for nanotechnology. Sean is very active in TAPPI's Nanotechnology Division, but also active in PaperCon, PLACE, CORREXPO and the Student Summit. He is currently Adjunct Professor in the School of Chemical Engineering, University of Maine, was the first Chair for the TAPPI Nano Division, and is on the Scientific Advisory Board for P3Nano, and the former Co-Chair for the Agenda 2020 Nano Materials and Novel Products Task Force and on the Board of Executives of Agenda 2020 Technology Consortium.

Special Recognition

The Division would like to also recognize the Student Committee Leadership for their vision to enhance student engagement and involvement within the community.

Kevin DeFrance, Co Vice-Chair, *McMaster University*
Nathan Ellebracht, Co Vice-Chair, *Georgia Tech*
Stephanie Kedzior, Co-Chair, *McMaster University*
Mike Reid, Co-Chair, *McMaster University*
Bailey Risteen, Co Vice-Chair, *Georgia Tech*

Poster Session

Poster Session and Student Poster Competition, Tuesday, 7 June, 2017 · 5:30pm – 7:30pm

Analysis of Effect the CMC and Surfactant on the Rheology and Curtain Stability of MNFC Curtain Coating Colors
Abdelaadim Tibouda, University of Québec in Trois-Rivières

Ultra-Light, Yet Mechanically Robust Cellulose Ester Aerogels for Environmental Remediation
Anurodh Tripathi, North Carolina State University

Modification of TEMP-Oxidized Cellulose Nanofibrils to Hydrophobic Surface
Byung-Dae Park, Kyungpook National University

An Overview of CNC Manufacturing Cost, Guidelines for Research Opportunities Based on Cost and Financial Risk Analysis
Camilla Abbati de Assis, NC State University

Control of Porous Structure of Paper in a Continuous Process
Christian Mair, KTH - Royal Institute of Technology

Effect of Bound Oligosaccharide Layers and Surface Charge on Cellulose Nanocrystal-Water Interactions
Elina Niinivaara, McMaster University

Mill Production Trial of Wood Fibre Insulation Boards Reinforced by Cellulose Filaments
Fabrice Roussière, FPInnovations

Effect of Pretreatment of Pulp Fibers on Characteristics of Cellulose Nanofiber
Hak Lae Lee, Seoul National University

Effects of Chemical Modifications and Manufacturing Process on Dispersibility of Cellulose Nanocrystals (CNCs) in Polypropylene (PP) Matrix
Jae Gyoung Gwon, National Institute of Forest Science

Magnetic CNC for Protein Separation
Jiaqi Guo, Aalto University

Fluorescent Carbon Quantum Dots Assembled on Cellulose Nanocrystals for Bio-Imaging
Jiaqi Guo, Aalto University

The Potential of Enzymatic (Lytic Polysaccharide Monooxygenase (LPMO), Endoglucanase and Xylanase) Pretreatments to Enhance Nanofibrillated Cellulose Production and Properties
Jinguang Hu, Dong Tian, Jack N. Saddler, and Scott Rennecker, University of British Columbia

Tailored and Integrated Production of Carboxylated Cellulose Nanocrystals (CNC) with Nanofibrils (CNF) Maleic Acid Hydrolysis
Junyong Zhu, Forest Products Laboratory, U.S. Forest Service

Integrated Production of Lignin Containing Cellulose Nanocrystals (LCNC) and Nanofibrils (LCNF) Using an Easily Recyclable Di-carboxylic Acid
Junyong Zhu, Forest Products Laboratory, U.S. Forest Service

The Influence of Functionalization and Drying of Cellulose Nanofiber Film Properties
Kendra Fein, University of Maine

Viscoelastic Characterization of Gelatin-Cellulose Nanocrystals Aqueous Bionanocomposites
Liliane Samara Ferreira Leite, Federal University of São Carlos

Super Absorbent Hydrogels: Crosslinking Between Nano Cellulose and Carbapol
Malladi Nagalakshmaiah, Malladi Rajinipriya and Mathieu Robert, University of Sherbrooke

Porous N/P-Doped Carbon from Coconut Shells with High Electrocatalytic Activity for the Oxygen Reduction Reaction
Maryam Borghei, Aalto University

Passive Microrheology using Light Scattering Techniques for Quick Analysis of Cellulose Nanocrystals
Serge Dandoche, Formulaction, Inc.

Cellulose Fibers Functionalized by Metal Nanoparticles Stabilized in Dendrimer for Formaldehyde Decomposition and Antimicrobial Activity
Mekuriaw Assefa, National Taiwan University of Science and Technology

Wet-Spinning of Cellulose Nanofibril Hydrogels
Meri Lundahl, Aalto University

Asymmetric Cellulose Nanocrystals via NHS/EDC Coupling of Thiol Groups to Reducing End
Meri Lundahl, Aalto University

Performance of nFOG™ Coated Thin Nanocellulose-Coatings in Glass Laminates
Mikko Tuominen, SP Technical Research Institute of Sweden

Polyurethane Elastomer Enhanced with Cellulose Nanocrystals
Min Haeng Heo, Korea University of Science & Technology (UST)

Tunable Softening and Toughening of Individualized Cellulose Nanofibers-Polyurethane Urea Elastomer Nanocomposites
Minwoo Lee, Korea Research Institute of Chemical Technology

Poster Session

Poster Session and Student Poster Competition, 7 June, 2017 · 5:30pm – 7:30pm

Optimization of Cellulose Nanocrystal Aspect Ratio and Colloidal Stability through Acid Hydrolysis with Phosphoric Acid
Oriana Vanderfleet, McMaster University

Structural and Rheological Behavior of CNC Particles in Water/PEG Solution
Quentin Beuguel, CREPEC, Polytechnique Montreal

Advanced Routes to Novel-Nanomaterials Using a Synthetic Biology Approach
Rachael Cullinan, University of Birmingham

Antibacterial Materials Development with Contact Active and Micro-Nano Structured Surfaces
Seema Saini, University Grenoble Alps - LGP2/Grenoble INP

Emulsification Behavior of Amphiphilic Nanocellulose Prepared by Aqueous Counter Collision
Shingo Yokota, Kyushu University

Designing of Combined Nano and Microfiber Network by Immobilization of Oxidized Cellulose Nanofiber on Polycaprolactone Fibrous Scaffold
Sun-Young Lee, Korea Forest Research Institute

Development of Cellulose Nanofiber-Reinforced Cellulose Sponge Disks for Cu^{2+} Recovery
Yinchao Xu, University of Tsukuba

NEW Spotlight on Students

TAPPI Nano 2017 features two new activities put on by and for students.

Student Presenters
Stop by the Nano Division Student committee table to see student presenters featured at this year's conference. A looping presentation will feature student bios, photos, and key points about their presentations.

Student Session Co-Chairs
Watch for student session co-chairs at selected sessions during the conference. Students will gain experience and knowledge by helping out in this key role.

2017 Student Session Co-Chairs
Nathan Ellebracht, Georgia Tech
Kevin De France, McMaster University
Blaine Fiss, McGill University
Stephanie Kedzior, McMaster University
Mike Reid, McMaster University
Bailey Risteen, Georgia Tech

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- Cellulose swelling, water uptake (thickness and refractive index solved simultaneously!)
- Charge coupling efficiency by varying the reaction conditions
- Enzymatic degradation
- Modification of cellulose
- Barrier coating quality (antibacterial, moist, antireflective)

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Blue Goose Biorefineries Inc. manufactures cellulose nanocrystals using a transition metal catalyzed oxidative process. Product features include birefringent films, chiral nematic structure formation, surface carboxyl groups and thixotropic behavior in water. People interested in evaluating and or developing applications can order product from the company website at **www.bluegoosebiorefineries.com**.

CelluForce is the world leader in the commercial production of CelluForce NCC™ a form of Cellulose NanoCrystals (CNC) produced from trees. CelluForce NCC™ is a sustainable and high performance material that can be used in a variety of products to improve their properties. **www.celluforce.com**

FiberLean® Technologies is a composite material comprised of mineral and wood pulp which has been processed together to create a micro-fibrillar mineral network. Mineral content can vary depending on the final application. Potential benefits of MFC/ mineral networks include fiber network reinforcement, fluid viscocification and enhancement of the end-product's functional performance. **www.fiberlean.com**

Formulaction has specialised in development and commercialisation of scientific instrumentation for R&D laboratories, since 22 years. Formulaction sells 90% in other contries with a distribution network. Our main application fields are food, cosmetics, pharmaceutics, petroleum, paint & inks fields. All Formulaction technologies are based on multiple light scattering in static for stability characterisation and dynamic for microrheology characterization. The advantages of such instrument is to work directly without sample preparation on concentrated samples. **www.formulaction.com**

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GL&V is a leading supplier of equipment used in various stages of pulp and paper production. FibreFine is GL&V's unique technology for producing Micro-Fibrillated Cellulose (MFC) including its application to the paper surface. We serve a global market that includes capital equipment, spare parts, rebuilds, upgrades, mechanical and process services.
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The Georgia Tech Renewable Bioproducts Institute (RBI) is the premier research institute for transformation of biomass into valued products, including pulp & paper, renewable energy, chemicals and advanced materials. We are an innovation ecosystem bringing together education, research, government and industry to enable companies to seize new opportunities and develop future leaders. **www.rbi.gatech.edu**

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INSTITUT CARNOT PolyNat

Five Grenoble research centers are involved in institute Carnot PolyNat, dedicated to the eco-production of high-added-value functional biosourced materials. PolyNat obtained the Carnot Label of Excellence at the end of April 2011 for the period 2011-2015. The PolyNat institute focuses on the elaboration and the production of use of high-added value, functional materials, either hybrid" (partly issued from fossil and natural resources), or totally "biosourced", by taking advantage of the self-assembly of elementary bricks constituting the plant material (glycopolymers, nanocrystals, cellulose fibres), at micro and nano scale. **www.polynat.eu/en**

NanoCanada

NanoCanada is a national initiative that brings together the community to stimulate innovation, enhance research and development capacity and stimulate the development of nanotechnology applications in collaboration withindustry. **www.nanocanada.com**

PERFORMANCE BioFilaments

Performance BioFilaments Inc. is commercializing a process for production of cellulose filaments. PBI utilizes lignin free kraft pulp as a starting material and mechanically converts this into highly fibrillated nano/micro cellulose. This material has an exceptionally high aspect-ratio and surface area, providing excellent physical characteristics for a wide variety of composite materials. **www.performancebiofilaments.com**

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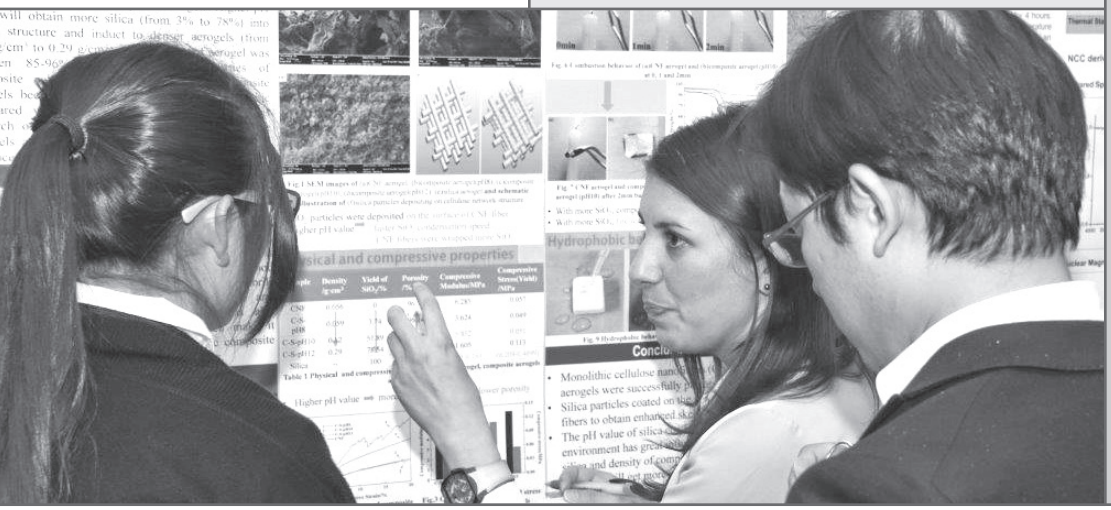

Conference Bookstore

These special publications from TAPPI are available to the 2017 attendees, most a "conference only" discount.

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TAPPI's International Nanotechnology Division

TAPPI NANO DIVISION

Advancing the responsible production and use of renewable and sustainable nanomaterials.

Join one of the Division's committees

Research Committee

- A forum for researchers to exchange information and collaborate on projects
- Eight subcommittees cover applications, functionalization and characterization
- Members review and select abstracts for the annual conference

Producers Committee

- Open to producers of cellulose nanomaterials only, and conducted under TAPPI's strict antitrust policy
- A forum where producers can identify industry-wide and pre-competitive issues

Student Committee

- A forum for students to engage in technical discussions, seek advice, and meet students around the world
- A resource for tools and advice for career development

Webinar Committee

- Develops webinar series on a variety of topics

Join our global community of professionals and students!

- Network with other scientists
- Plan the annual conference
- Launch initiatives to support the Division mission

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- Professionals, students, and consultants connect around topics, interests and research
- Secure space for members and volunteers to share and communicate
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General Information

ADA Assistance
Attendees with special needs are encouraged to contact the staff at the TAPPI Registration Desk so TAPPI can make your participation more enjoyable and meaningful.

Antitrust Policy Statement
TAPPI is a professional and scientific association organized to further the application of science, engineering, and technology in the pulp and paper, packaging and converting, and allied industries. Its aim is to promote research and education, and to arrange for the collection, dissemination and interchange of technical concepts and information in fields of interest to its members. TAPPI is not intended to, and may not, play any role in the competitive decisions of its members or their employers, or in any way restrict competition among companies.

Commercialism Policy
Although commerce is a driving force for our technologies, TAPPI technical sessions are not a platform for commercial (sales) presentations. Presentations that are technical and objective enhance the credibility of the presenter and his or her organization. Restricting commercialism ultimately benefits both the presenters and the TAPPI audience. Excessive use of brand names, product names or logos, failure to substantiate performance claims, and failure to objectively discuss alternative methods, processes or equipment are indicators of sales presentations.

Badges
It is important that the official badge supplied at the time of registration be worn at all times. This practice is a courtesy to your fellow registrants. It also indicates that you have completed registration and may participate in the events scheduled. Admission to technical sessions and workshops will be by badge only.

Hosted Events not sponsored by TAPPI
All company hosted events (customer meetings, social events, etc.) that are not officially a part of TAPPI's program may not conduct group functions which compete with scheduled TAPPI activities, such as technical sessions, committee meetings, receptions, award ceremonies, group meals and trade fairs or exhibits. If you are planning to host a group event, please check with the TAPPI Account Manager to avoid conflict.

TAPPI's Policy Regarding Equipment at Non-Exhibit Events
TAPPI prohibits the unauthorized physical display or demonstration of equipment in sessions, workshops, or committee meetings held during TAPPI seminars, short courses, conferences, or other meetings unless approved by the TAPPI Account Manager. This prohibition does not preclude the graphic non-commercial depiction of equipment via slides, pictures, or video tape. This prohibition is intended to preclude commercialism and to minimize attendee exposure to potentially dangerous equipment and to avoid conflicts with contractual and governmental requirements regarding the use of meeting facilities. All inquiries should be directed through the TAPPI Account Manager on-site.

Lost and Found
Articles which are found should be brought to the Registration Area. Please note the room in which the article was found for the purpose of tracing it to the appropriate owner.

Membership and Publication Information
TAPPI membership dues, membership applications (TAPPI and committee), and requests for TAPPI publications may be obtained at the registration.

Nonmembers of TAPPI
If you apply for membership in TAPPI while at this meeting, you will be able to register at the member rate. Take advantage of this opportunity to join TAPPI and save money.

Photographic Consent
Photographs may be taken during this meeting for TAPPI to use for publicity purposes. A registrant's presence at the meeting constitutes consent for TAPPI to use the photographs in which he or she may appear.

Ribbons
Association, technical division, and committee officers are requested to pick up their ribbons at the registration desk. Session chairmen and speaker ribbons will also be available at the registration desk.

Tax Deduction for Educational Expenses
U. S. Treasury regulation paragraph 1.162.5 permits an income tax deduction for educational expenses (registration fees and cost of travel, meals, and lodging) undertaken to: (1) maintain or improve skills required in one's employment or other trade or business, or (2) meet express requirements of an employer or a law imposed as condition to retention of employment, job status, or rate of compensation. Under the Tax Reform Act of 1993, however, non-reimbursed employment-related educational expenses are deductible only to the extent that they exceed 2% of adjusted gross income. In addition, the new tax law limits the deduction for otherwise allowable business meals and business entertainment to 50% of cost.

Use of Personal Video Recording Equipment at Technical Sessions
The use of personal recording equipment to record technical sessions at TAPPI conferences is strictly prohibited. Only TAPPI's official designee is authorized to video tape sessions. Should a company and/or individual seek to violate this prohibition, that company and individual will be barred from giving technical presentations at TAPPI sponsored events for a period of two years, that period starting from the date of infraction. TAPPI staff is authorized to have equipment in violation of this policy immediately removed upon detection and shipped to the owner's principle location at the owner's expense. Inquiries on this policy should be directed to the TAPPI Meetings Department, c/o TAPPI headquarters.

Safety Information

Fire Survival

When you reach your hotel room, ask yourself: Can I close my eyes, hold my breath, and go directly to the nearest fire exit WITHOUT LOOKING in 15 seconds?

You may have to do just that:

- Under emergency conditions
- In smoke
- In darkness
- At 3:00 a.m.

Because panic is the main problem in unfamiliar surroundings, you should prepare for emergencies when you travel. The following information is provided to help you prepare for a hotel fire emergency. Remember that by-products of fire (gases, smoke, etc.) kill more people than fire itself.

Survival Plans

- Familiarize yourself with your new surroundings by checking the emergency exit and escape routes.
- Ensure that doors are unlocked and exit routes are free of obstructions.
- Study the room you are staying in (do the windows open, what is the distance to the ground, etc.).
- Avoid elevators in emergency situations.
- Count the number of doors and walls between your room and the emergency exits. Smoke could obscure lighted signs.

Before and After Leaving the Room

- When an alarm sounds, slowly feel the surrounding walls and doors with the back of your hand. If the door is warm, stay as low as possible (to avoid smoke) and open it slowly. If the door and walls are not warm, proceed toward the emergency exit using the most direct route. If the smoke is too heavy, remain in room.
- Take the key with you. You might find it safer to return to your room.
- If the smoke thickens as you go down the escape stairs, go up one flight and cross over to an alternate staircase.
- If access to the alternate staircase is blocked, proceed to your room and wait for assistance.
- Avoid breaking windows. Broken windows can allow fire and smoke into the room. If a window must be broken or opened, dangle a bed sheet from the window as a signal to firemen. Don't jump if the fall is more than two stories.

If You Cannot Leave the Room

- Place towels and bedclothes around the door areas. Keep them soaked with water.
- Fill the bathtub and use it as a reservoir for wetting down the entire room. Placing yourself in a filled tub will not offer protection.
- Hold a wet towel around your face to filter smoke.
- Dial the hotel emergency number (0) to tell rescue personnel where you are.

General Safety Tips

To make your conference experience a safe and enjoyable one, please keep the following safety tips in mind. While you are out of the hotel, please know that, like in all cities, awareness and caution are certain to help ensure your safety. A common crime is pick pocketing, with women's purses being the prime target. Some simple precautions you can take are:

- Never carry all of your valuables in the same place. Keep them secured in a safe deposit box.
- Never walk alone at night, especially to off property locations; there really is safety in numbers!
- Do not leave purses, briefcases or other personal property unattended in public locations. Use hotel services such as a coat check or luggage storage.
- Remove your name badge while out of the hotel. They identify you as an out-of-towner and easy target for crime.
- Women: carry your purse with the strap over your shoulder and across your chest, keeping it closed or latched with the bag portion in front of you. For added protection in crowds, you can rest your hand on top. Be particularly watchful of distractions in revolving doors, elevators or in the public.
- Men: Wrap a heavy rubber band around your wallet to prevent it from being easily slipped out of your pocket or carry it in your front pants pocket.
- If you find that you have become a victim, report the crime to the police.
- Report any suspicious persons or behavior in the hotel or convention center to the registration desk or any TAPPI staff.

2018 International Conference on Nanotechnology for Renewable Materials

June 11- 14, 2018
Monona Terrace Community and Convention
Madison, WI, USA

TAPPI NANO DIVISION

Add this not-to-miss event to your calendar now and watch for updates on tappinano.org.