

# 2012 TAPPI INTERNATIONAL CONFERENCE

## On Nanotechnology for Renewable Materials

June 4-7, 2012

Hyatt Regency Montréal • Montréal, Québec CANADA

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

### Bringing a New Dimension to Sustainable Business Solutions

Nanotechnology of renewable materials is a growing critical element in the developing bio-economy. In particular, cellulose nanomaterials play a significant role given their unique properties and abundance. In the last year, companies around the world have made significant investments in pilot plants, demonstration plants, and semi-commercial facilities.

As this readily advancing field unlocks the potential of bio-based materials, TAPPI's annual International Conference on Nanotechnology for Renewable Materials is the only event devoted to showcasing the newest research, applications, and commercial development issues. Leading scientists and researchers from industry and academia find a rich networking opportunity to learn about the latest discoveries and uses. Connect with technology and applications experts across an expanding array of industries in Montréal this June.

#### At the 2012 TAPPI International Conference on Nanotechnology for Renewable Materials you will find:

##### Technical Sessions

Nanocellulosics and Nanocomposites  
Solution  
Modeling  
Nanomaterials Characterization  
Nanostructured Materials by Self Assembly  
Cellulose Nanomaterials Processing  
Nanotech Coatings  
Novel Nano-Enabled Functionalities Applications:  
Novel Possibilities  
Composites  
Packaging Materials  
Environment, Health, and Safety  
Innovations in Forest Industry

##### Workshops

Business Innovation and  
Convince the investor  
International Standards

##### Facility Tour

CelluForce

##### Conference Co-Chairs:

Ron Crotogino, ArboraNano  
Patrice Mangin, Centre Intégré en Pâtes et Papiers  
Robert Moon, USDA Forest Service

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### CelluForce Tour

Conference registration includes tour of CelluForce, the world's first Nanocrystalline Cellulose (NCC) plant

Kick off your 2012 TAPPI international Conference on Nanotechnology for Renewable Materials experience with a tour of CelluForce, located in Windsor, Québec on Monday, June 4 from 11:00 am-4:00 pm. CelluForce is the world leader in the commercial development of NCC. The company is a joint venture of Domtar Corporation and FPInnovations. The CelluForce team will be on site to explain some of the manufacturing processes and answer questions. Please note that pictures and/or video will be forbidden. Lunch will be provided. You must be a registered TAPPI conference attendee to sign up for the CelluForce tour.

“We are the only and first semi-commercial facility. We're bringing a virtually non-toxic bio-product to market for industries that will no longer need to use environmentally harmful chemicals in the manufacture of their products.”

– Jean Moreau, President and CEO, CelluForce

### WANT TO LEARN MORE? JOIN TAPPI'S INTERNATIONAL NANOTECHNOLOGY DIVISION

TAPPI's International Nanotechnology Division serves as the leading global forum for the community of individuals, organizations and institutions seeking to collectively advance the responsible and sustainable production and use of renewable nanomaterials.

The Division works to:

#### Gain Knowledge and Expand Your Professional Network

- Advance research, development and deployment of renewable nanomaterials to help meet the material needs of people and society.
- Share and disseminate knowledge and information on the responsible production, use, and disposal of renewable nanomaterials, with a special emphasis on nanomaterials produced from forest biomass.
- Advance the science and technology supporting the production, modification and end user applications for renewable nanomaterials used either alone or in combination with other materials.

The Division has established three teams to work on supporting Division activities:

- **Technical Team** - focuses on the Annual Conference, Symposiums, and Courses.  
Team Leaders: Robert Moon, USDA Forest Service and Yaman Boluk, University of Alberta.
- **Marketing & Promotions Team** – focuses on industry outreach, campus outreach, division recruitment, and industry trends.  
Team Leaders: John Cowie, Agenda 2020 and Professor Bruce Lyne, Royal Institute of Technology.
- **Product Resources & Development Team** – focuses on the development of new books, standards, and other educational material. Team Leader: Mike Bilodeau, University of Maine.

**Chair: Sean Ireland**  
New Product Development Manager  
Verso Paper

**Vice Chair: J. Philip E. Jones**  
Director New Ventures IMERYS

**Secretary: Theodore H. Wegner**  
WFCR, Asst. Director USDA Forest  
Products Laboratory

To learn more or join the Nano Division or one of the Division Teams, email Mary Ann Cauthen, TAPPI Member Group Coordinator, at [mcauthen@tappi.org](mailto:mcauthen@tappi.org).





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### You Won't Want to Miss the Keynote Presentations Including:



**Dr. Dylan J. Boday**  
*Advisory Engineer Team Lead*  
*IBM's Materials Engineering Laboratory*

Dr. Dylan J. Boday is the Advisory Engineer Team Lead for IBM's Materials Engineering Laboratory. In this role, he leads efforts across multiple divisions to advance technological capabilities and enhance product performance.

His research at IBM focuses on creating inventive pathways toward the development of polymers, composites, surface science, nanoparticles and hybrid materials. Boday has organized several strategic partnerships to leverage new materials development that align with specific business needs for IBM. He also established and now leads a global team focused on the sustainability of IBM's products and is the co-lead of an upcoming international conference that will focus on the advances and challenges of sustainable materials.



**Jean Moreau**  
*President and Chief Executive Officer*  
*CelluForce*

As President and CEO of CelluForce since February 2011, Jean Moreau brings a wealth of experience in finance, operations and business development which he acquired in both private and public corporations, in various fields including manufacturing, entertainment, distribution and consumer goods.

As head of the CelluForce team, Jean wishes to promote, within several sectors of activity, the development of commercial applications related to NCC around the world, thus ensuring the company's manufacturing and commercial growth.



**Jean Hamel, Eng.**  
*Vice President*  
*FPIInnovations*

Jean Hamel, Eng., has served as Vice President for FPIInnovations since 2009, leading the innovation program on pulp and paper and shifting the R&D effort to develop new chemicals, biomaterials and composites from wood fibers. He currently sits on the boards of CelluForce, a Domtar-FPIInnovations joint venture on nanocrystalline cellulose (NCC) production, Sustainable Chemistry Alliance (SCA), ICGQ, ADRIQ and NSERC Green Fiber Network.



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### Technical Program

(Subject to Change)

#### Monday, June 4

11:00 am - 4:00 pm

**Session:** Cellulforce Tour

6:00 pm - 6:30 pm

**Session:** Speaker/Session Chair Meeting Reception

6:30 pm - 7:30 pm

**Session:** Welcome Reception

#### Tuesday, June 5

8:00 am - 8:45 am

**Session 1:** Welcome & Introductions

**Session Chair:** *Patrice Mangin*, Lignocellulosic Materials Research Centre/UQTR

*Pierre LaPointe*, Conference Chairman

“Overview of Nanomaterials”

*TBD*

9:00 am - 10:30 am

**Session 2: Nanocellulosics and Nanocomposites: Solutions**

**Session Chair:** *Johan Foster*, University of Fribourg

“Gelation of Cellulose Nanocrystal Suspensions in Glycerol”

*Derek Gray*, McGill University, Department of Chemistry

*Annie Dorris*, FPInnovations

“Ionic Crosslinking of Cellulose Nanocrystals”

*John Simonsen*, Oregon State University

*Han Chan*, Oregon State University

“Characterization and Application of Bio-Based Nanofibers Prepared Using Aqueous Counter Collision for Composites and Surface Coating”

*Tetsuo Kondo*, Kyushu University

**Session 3: Nanomaterials Characterization**

**Session Chair:** *Stephanie Beck*, FPInnovations

“Mechanical Testing of Thin Film Nanocellulose Materials”

*Emily Dawn Cranston*, McMaster University

“Gaining Insights into Polymer Microdomain Formation via Nanoscale Infrared Spectroscopy”

*Roshan Shetty*, Anasys Instruments Corp.

“Nanomechanical Measurements of Cellulose Nanocrystals using the Atomic Force Microscope”

*Ryan Wagner*, Purdue University

*Robert Moon*, USDA Forest Service

*Arvind Raman*, Purdue University



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### Tuesday, June 5

11:00 am - 12:30 pm

#### Session 4: Nanocellulosics and Nanocomposites

**Session Chair: John Simonsen**, Oregon State University

“Use of Förster Resonance Energy Transfer (FRET) as a New Characterization Method for the Interface and Interphase in Nanofibrillated Cellulose Nanocomposites”

**Jeffrey W. Gilman**, NIST

“Cellulose Composites with Light-Responsive Behaviour”

**Johan Foster**, University of Fribourg

**Mahesh Biyani**, Adolphe Merkle Institute

**Johan Foster**, University of Fribourg

**Christoph Weder**, Adolphe Merkle Institute

“Melt Processing of Polymer Nanocomposites Reinforced with Cellulose Nanocrystals”

**Alain Dufresne**, PhD, Grenoble Institute of Technology

12:30 pm - 2:00 pm

#### Session 6: Keynote

**Session Chair: Robert Moon**, USDA Forest Service

“Renewable Materials for Information Technology Applications”

**Dr. Dylan J. Boday**, Advisory Engineer Team Lead, IBM’s Materials Engineering Laboratory

2:00 pm - 3:30 pm

#### Session 7: Cellulose Nanomaterials Processing I

**Session Chair: Bruce Lyne**, Retired from Royal Institute of Technology

“Dispersing Dried Nanocrystalline Cellulose in Water”

**Stephanie Beck**, FPIInnovations

**Richard M. Berry**, FPIInnovations

**Jean Bouchard**, FPIInnovations

“Spray-Drying Cellulose Nanofibrils: the Effect of Spray Drying Processing Parameters on Particle Morphology and Particle Size Distribution”

**Douglas J. Gardner**, University of Maine

“Interfacial Design of Cellulose-Based Nanomaterials by Chemical Modification”

**Shingo Yokota**, Kyushu University

#### Session 5: Nanostructured Materials by Self Assembly

**Session Chair: Derek Gray**, McGill University

“Processing and Characterization of High Strength Nanocellulose Films”

**Jeffrey Youngblood**, Purdue University

**Robert Moon**, USDA Forest Service

**Jen-Chieh Liu**, Purdue University

**Jairo Diaz**, Purdue University

**Alex Riesing**, Purdue University

“Crystallization of Cellulose Nanocrystal/Polyhydroxybutyrate Nanocomposites”

**Stephanie Lin**, Georgia Institute of Technology

“Flocculation of Cellulose Nanocrystals by Adsorbing and Non-Adsorbing Polymers”

**Yaman Boluk**, Ph.D., University of Alberta

**Christophe Danumah**, National Institute for Nanotechnology

**Zahra Khalili**, University of Alberta

#### Session 8: Nanotech Coatings and Novel Nano-Enabled Functionalities I

**Session Chair: Jean Bouchard**, FPIInnovations

“Transition Metal Oxide - Nanofibrillated Cellulose Composite Films for Photocatalytic Degradation of Pollutants in Water”

**Alexandra Snyder**, Purdue University

**Robert Moon**, USDA Forest Service

**Lia Stanciu**, Purdue University

“Effect of Nanocrystalline Cellulose on Trimethylolpropane Trimethacrylate Grafted Methylcellulose-Based Biodegradable Films”

**Stephane Salmieri**, INRS-Institute Armand Frappier

**Ruhul Khan**, Post Doc, INRS-Institute Armand Frappier

**Dominic Dussault**, INRS-Institute Armand Frappier

**Jean Bouchard**, FPIInnovations

**Monique Lacroix**, INRS-Institute Armand Frappier

“Inclusion of Nanocellulose in Coatings for Wood”

**Bouddah Poaty**, Université Laval - Centre De Recherche Sur Le Bois

**Greg Chauve**, FPIInnovations

**Veronic Landry**, FPIInnovations

**Bernard Riedl**, Centre de Recherche sur le Bois



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### Tuesday, June 5

4:00 pm - 5:30 pm

#### Session 9: Cellulose Nanomaterials Processing II

**Session Chair: Alain Dufresne**, Grenoble Institute of Technology

“Specific Conditions for Isolation Nano-Crystalline Cellulose Particles”

**Michael Ya. Ioelovich**, Designer Energy

“Gradual Disintegration Procedure in Optimization of Chemi-Mechanical Treatment for Micro- and Nanocellulose Production”

**Kaarina Kekalainen**, University of Oulu

**Mirja Illikainen, PhD**, University of Oulu

**Jouko Niinimäki, PhD**, University of Oulu

“Development Of Birch Cellulose Properties In Mifrofibrillation By Stirred Media Milling And Homogenization”

**Terhi Tuulikki Suopajarvi**, University of Oulu

#### Session 10: Nanotech Coatings and Novel Nano-Enabled Functionalities II

**Session Chair: Yaman Boluk, Ph.D.**, University of Alberta

“Control of Surface Energy of Paper by Starch Self-Organization”

**Mika L.J. Anttila**, VTT Technical Research Centre of Finland

“Potential Applications of Nanofibrillated Cellulose in Printing and Writing Papers”

**Michael A. Bilodeau**, University of Maine

**Douglas Bousfield**, University of Maine

“Microencapsulation of Lactobacillus Rhamnosus ATCC 9595 in Alginate-Nanocrystalline Cellulose (NCC) Beads: Effect of Starch and Lecithin”

**Tanzina Huq**, Student, INRS-Institut Armand Frappier

**Jean Bouchard**, FPInnovations

**Carole Fraschini**, FPInnovations

**Bernard Riedl**, University Laval

**Stephane Salmieri**, INRS-Institute Armand Frappier

5:30 pm - 7:30 pm

#### Session 11: Table Top Reception and Poster Session

**Session Chairs: Robert Moon**, USDA Forest Service;

**Patrice Mangin**, Lignocellulosic Materials Research Centre/UQTR

**Student Poster Session Judge: Ronald C. Sabo, Jr.**, USDA FS Forest Products Laboratory

**Vahé Vardanyan**, Centre de Recherche sur le Bois

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### Wednesday, June 6

8:00 am - 8:45 am

#### Session 12: Keynote

**Session Chair: Ron Crotagino**, ArboraNano

“The Business of Innovation – CelluForce, A Case Study”

**Jean Hamel**, FPInnovations

**Jean Moreau**, CelluForce

9:00 am - 10:30 am

#### Session 13: Applications I: Novel Application Possibilities

**Session Chair: Sean Ireland**, Verso Paper

“Cellulose Nanofiber Composite Substrates for Flexible Electronics”

**Ronald C. Sabo, Jr.**, USDA FS Forest Products Laboratory

**Zhenqiang Ma**, University of Wisconsin-Madison,  
Department of Electrical & Computer Engineering

**Jung-Hun Seo**, University of Wisconsin-Madison, Department  
of Electrical & Computer Engineering

“Structured Nanocellulose Materials: Preparation,  
Functionalization and Templates for Transparent Composites”

**Hong Dong**, US Army Research Laboratory

“Value from Nano for the Forest Products Industry:  
Presenting Opportunities and Up-Dating a Vision”

**Katja Bergroth**, Poyry Management Consulting Oy

11:00 am - 12:30 pm

#### Session 15: Applications I: Packaging Material Applications

**Session Chair: Ulla M. Forsström**, PhD, VTT Technical  
Research Centre of Finland

“The Potential Use of Micro- and Nano Fibrillated Cellulose as  
a Reinforcing Element in Paper and Board Based Packaging”

**Isko Kajanto**, UPM

“Replacement of Synthetic Binders with Nanofibrillated  
Cellulose in Board Coating”

**Heikki Pajari**, VTT Technical Research Centre of Finland

**Pertti Moilanen**, VTT Information Technology

“Antimicrobial Copper Nanoparticles in Cellulose-Based Food  
Packaging Materials”

**Gloria S. Oporto**, West Virginia University

**Tuhua Zhong**, West Virginia University

#### Session 14: Applications II/Composites

**Session Chair: Johanne Denault**, National Research Council  
Canada, Industrial Materials Institute

“Nanocrystalline Cellulose as a Green Reinforcing Material for  
Wood Adhesives”

**Alireza Kaboorani**, University Laval

**Marco Fellin**, IVALSA Istituto per la Valorizzazione del Legno e  
delle Specie Arboree

**Omid Hosseinaei**, University of Tennessee

**Bernard Riedl**, University Laval

**Sequin Wang**, University of Tennessee

“Water-Activated, Shape Memory Twist Effect in Wood Slivers  
as an Inspiration for Biomimetic Smart Materials”

**Joseph E. Jakes**, USDA FS Forest Products Laboratory  
Nayomi Plaza

**Don Stone**, University of Wisconsin- Madison

**Sam Zelinka**, USDA FS Forest Products Laboratory

“Silylated Cellulose Nanofibrils In Polymer Nanocomposites”

**Zheng Zhang**, Swiss Federal Laboratories for Materials  
Science and Technology

#### Session 16: Applications II/Composites

**Session Chair: Steven Masia**, Sappi Fine Paper N.A.

“Preparation and Characterization of Polymer Nanofibres  
Containing Nanocrystalline Cellulose”

**Andrew C. Finkle MASc**, University of Waterloo

**Leonardo Simon**, University of Waterloo

“Characterization of Trilayer Antimicrobial Diffusion Films (ADFs)  
Based on Methylcellulose-Polycaprolactone Composites”

**Afia Boumail**, IAF-INRS

“Synthesis of an Nano Amphiphilic Cellulose and Its Use for  
Polysulfone Dialysis Membrane Surface Modification”

**Yuan Gao**, Beijing Forestry University



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### Wednesday, June 6

12:30 pm - 2:00 pm

#### Session 17: Networking Lunch

Session Chair: **Ronald C. Sabo, Jr.**, USDA FS Forest Products Laboratory

Student Poster Winners Announced

2:00 pm - 4:30 pm

#### Session 18: Workshop on Business Innovation and Convince the Investor

Session Chair: **Ron Crotagino**, ArboraNano

“Demystifying the Process of Innovation”

**Brian Engleman**, SRI International

“Picking the Winners”

**Paul Smith**, Xerox Corporation

6:00 pm - 10:00 pm

#### Session 19: Conference Offsite Reception

Dinner at Vieux-Port Steakhouse and Cirque du Soleil Show

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### Dinner at Vieux-Port Steak House followed by Cirque Du Soleil's Amaluna

Wednesday, June 6, 2012

Board buses at hotel at 5:30 pm



The Gala event on Wednesday, June 6 starts with dinner at Vieux-Port Steakhouse, Montréal's landmark steakhouse located just steps away from the Old Port. With old stone walls, wood floors, large picture windows, and cozy fireplaces Vieux-Port's dining rooms evoke a warm and inviting atmosphere.

After dinner, you and your fellow delegates will walk over to Cirque Du Soleil's Amaluna, the show that invites you to a mysterious island governed by Goddesses and guided by the cycles of the moon.



This Gala event is included in the full conference registration, the single day registration for Wednesday and the Spouse/Guest program.





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### Thursday, June 7

8:00 am - 8:45 am

#### Session 20: Keynote

**Session Chair: Robert J Moon**, USDA Forest Service

Perspectives on EHS Nanotechnology Science and Standards Development

**Andy Atkinson**, Health Canada, Environment Canada

9:00 am - 10:30 am

#### Session 21: EHS

**Session Chair: Brian O'Connor**, FPInnovations

“Proactive Approaches to Risk Management for Nanomaterials”

**Jo Anne Shatkin**, CLF Ventures Inc

“What Have we Learned about Human Health Impacts of Carbon Nanotubes: Summary of Toxicology Research for Carbon Nanotubes (CNTs)”

**Richard C Pleus**, Intertox

“Assessing the Characteristics and Safety of Nanocellulose – Consensus and Co-Operation on National, European and International Level”

**Heli Kangas**, VTT Technical Research Centre of Finland

**Ulla Forsström**, VTT Technical Research Centre of Finland

**Marja Pitkanen**, VTT Technical Research Centre of Finland

11:00 am - 12:30 pm

#### Session 23: EHS Panel

**Session Chair: Jo Anne Shatkin**, CLF Ventures Inc

Panelists:

**Rene D. Goguen**, P.E., CelluForce

**Claude Ostiguy**, IRSST

**Brian O'Connor**, FPInnovations

**Abdul Afghan**, Health Canada

#### Session 22: Innovation in Forest Industry

**Session Chair: Nicole Poirier**, ArboraNano

“Innovation in Forest-Based Nanomaterials: Pay to Play”

**G. Ronald Brown**, Agenda 2020 Technology Alliance

“A Research Joint Ventures (RJV) Model for Advancing Development on Renewable Nanomaterials”

**John G. Cowie**, Agenda 2020 Technology Alliance

“ArboraNano – an Industry Driven Innovation Network”

**Ron Crotagino**, ArboraNano

**Nicole Poirier**, ArboraNano

#### Session 24: International Standards

**Session Chair: Clive Willis**, CWIC Inc.

Participants:

**John Simonsen**, Oregon State University

**Canadian Presenter-TBD**

**Ulla Forsström**, VTT Technical Research Centre of Finland

**Prof. Hiroyuki Yano**, University Uji

### Nanotechnology Standards Workshop – Thursday, June 7th 2012 – 2:00-5:30 PM

Hosted by TAPPI's International Nanotechnology Standards Coordination Committee, this workshop continues the effort, started in June 2011 to develop standards for nanotechnology. Topics to be discussed include:

- An update on the Nanocellulose Roadmap
- Identification and Coordination of Pre-normative studies for development of characterization standards
- Environment, Health, and Safety Standards Development

Workshop participation is open to all conference attendees. To join this committee and help in preparing for the workshop, contact [mcauthen@tappi.org](mailto:mcauthen@tappi.org).



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### Thursday, June 7

12:30 pm - 2:00 pm

**Session 25: Lunch** (On your own)

2:00 pm - 3:30 pm

**Session 26: Nanocellulosics and Nanocomposites: Modeling**

**Session Chair: Gregory Chauve**, FPIInnovations

“Prediction of the Elastic Properties of Cellulose Nano-Crystal-Reinforced Cellulose Fiber Networks”

**R. Byron Pipes**, Purdue University

**Johnathan Goodsell**, Purdue University

**Robert J Moon**, USDA Forest Service

“On the Multiscale Mechanics of the Hierarchical Structure of Cellulose Nanocrystals”

**Fernando Dri**, Purdue University

**Pablo D. Zavattieri**, Purdue University

**LG Hector**, General Motors

**A Martini**, University of California Merced

**Robert J Moon**, USDA Forest Service

“Multiscale Theoretical Modeling of the Structure and Dispersion of Grafted Nanocrystalline Cellulose for Rational Design of Green Nanocomposites and Foams”

**Stanislav R. Stoyanov**, National Institute for Nanotechnology

**Nikolay Blinov**, University of Alberta

**Javier Cuervo**, University of Alberta

**Sergey Gusarov**, National Institute for Nanotechnology

**Alexander Kobryn**, University of Alberta

**Andriy Kovalenko**, National Institute for Nanotechnology

**Olga Lyubimova**, University of Alberta

**Igor Omelyan**, University of Alberta

4:00 pm - 5:30 pm

**Session 28: Modeling Round Table-Challenges in Modeling at the Nano Length Scale**

**Session Chair: TBD**

Participants:

**Dr Sylvain Robert, Ph.D.**, Centre de recherche sur les matériaux lignocellulosiques, Université du Québec à Trois-Rivières

**John Nairn**, Oregon State University

Open Discussion - Contributions from the floor are welcome

6:00 pm - 7:00 pm

**Session COM1: Open Steering Committee Meeting - Guests Welcome**

2:00 pm - 5:30 pm

**Session 27: Standards Workshop**

**Session Chairs: World Nieh**, USDA Forest Service

**Dave Ensor**, RTI International

Participants:

**Stanislav R. Stoyanov**, National Institute for Nanotechnology

The success of the 2011 Workshop on International Standards for Nanocellulose has resulted in writing of the Roadmap for the Development of International Standards for Nanocellulose (Draft 4). Since then, TAPPI has formed the International Nanocellulose Standards Coordination Committee (INSCC) in its Nanotechnology Division to house and coordinate the execution of the Roadmap. The 2012 Workshop on International Standards for Nanocellulose will bring workshop participants up-to-date on nanocellulose standards activities since the completion of the Roadmap (Draft 4), initiate coordination activities in several areas of nanocellulose standards development, and if necessary, discuss revisions to the Roadmap.

2:00 - 2:20 pm

**Opening Presentation by Session Chair**

The INSCC and Its Activities in 2011-2012 - by World Nieh and Dave Ensor

2:20 -3:30pm

**Breakout sessions** (concurrent)

**Breakout 1:** Issues in developing measurement and characterization standards for nanocellulose - lead tbd

This breakout session will focus on planning of prenormative studies in measurement and characterization standards for nanocellulose.

**Breakout 2:** Issues in developing environment, health and safety (EHS) standards for nanocellulose- lead Jo Anne Shatkin

This breakout session will focus on identifying areas in EHS that are ready for nanocellulose standards development and if possible organize specific tasks to initiate standards development in the identified areas.

3:30 - 4:00

**Report back from breakout sessions**

4:00 - 4:30 pm

**Discussion on the Roadmap for the Development of International Standards for Nanocellulose**

4:30 pm

**Adjourn**



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## **HOTEL**

Hyatt Regency Montréal  
1255 Jeanne-Mance Street, P.O. Box 130  
Montréal, Québec H5B 1E5 Canada  
Telephone: 1.514.982-1234 • Fax: +1. 514.285.1243  
www.montreal.hyatt.com

Make your hotel reservation online at <http://tinyurl.com/nano-hotel> or call +1.800.361.8234 and refer to the TAPPI Nanotechnology Conference.

2012 TAPPI International Conference on Nanotechnology for Renewable Materials attendees will receive a special discount rate of \$219 CAD plus 18% tax. Registrants will also receive complimentary Wi-Fi in their rooms. To qualify for this rate, make your reservation on or before **May 11, 2012** and be sure to mention TAPPI when making your reservations.

Discover this dynamic city from the perfectly situated Hyatt Montréal hotel. The location of the hotel offers direct underground access to the Palais des Congrès (Montreal Convention Centre), as well as Chinatown, Old Montréal, Place des Arts (Performing Arts Centre) and the Metro transport system. Explore centuries of history in Old Montreal and dine at one of the area's many restaurants conveniently located to the hotel.



## **2012 TAPPI International Conference on Nanotechnology for Renewable Materials Bookstore**

A special list of industry-related publications is available to 2012 TAPPI International Conference on Nanotechnology for Renewable Materials attendees at a "conference only" discount.

You can purchase these books when registering and pick them up at the Conference.

**2011 TAPPI International Conference on Nanotechnology for Renewable Materials Proceedings CD..... (11NANOCD)**  
Special Conference Only Price: **\$92** – a savings of \$45 off the List Price!

**2010 International Conference on Nanotechnology Proceedings CD ..... (10NANOCD)**  
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**Polymer Nanocomposites Handbook ..... (11POLYNANO)**  
Special Conference Only Price: **\$113** – a savings \$32 off the List Price!

**Nanotechnology 2010 Biofuels, Renewable Energy, Coatings and Compact Modeling; Technical Proceedings of the 2010 NSTI Nanotechnology Conference and Expo (Volume 3) ..... (11NANO2010V3)**  
Special Conference Only Price: **\$150** – a savings of \$40 off the List Price!

**Nanotechnology Understanding Small Systems ..... (11NANOSMALL)**  
Special Conference Only Price: **\$80** – a savings of \$20 off the List Price!

**Nanotechnology for the Forest Product Industry Vision and Technology Road Map ..... (0101R314)**  
Special Conference Only Price: **\$60** – a savings of \$20 off the List Price!

**Nano Science and Nano Materials: Synthesis, Manufacturing and Industry Impacts ..... (12NSNM)**  
Special Conference Only Price: **\$125** – a savings of \$24 off the List Price!

To view a complete list of products visit [www.tappi.org/bookstore](http://www.tappi.org/bookstore).





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2012 TAPPI International Conference on Nanotechnology for Renewable Materials Registration

**Become a TAPPI member and save more than 30% off registration fees.**

**It pays to be a TAPPI member!**

**Two easy ways to register for the conference:**

- 1. Online at [www.tappinano.org](http://www.tappinano.org)**
- 2. Call TAPPI Member Connection at 1.800.332.8686 (US); 1.800.446.9431 (Canada) or +1.770.446.1400 (Worldwide)**

### Conference Registration Options

*All fees are in US Dollars*

	On or before May 6	May 7-May 31	June 1 and beyond
TAPPI Member Full Conference	\$875	\$1,025	\$1,117
Non-Member Full Conference	\$1,150	\$1,355	\$1,594
Member Single Day	\$445	\$445	\$612
Nonmember Single Day	\$650	\$650	\$788
Speaker Full Conference	\$595	\$665	\$777
Speaker Single Day	NC	NC	NC
Retired TAPPI Member	\$560	\$560	\$560
Group Discount – TAPPI Member (price per person for 3+ from same company)	\$750	\$750	\$874
Group Discount – Nonmember (price per person for 3+ from same company)	\$1,045	\$1,045	\$1,236
Student Member	\$100	\$105	\$115
Student Nonmember	\$100	\$105	\$115
Spouse Guest Program	\$150	\$150	\$150
Join TAPPI and Save Group* (price per person for 3+ from same company)	\$750+174= \$924	\$750+174= \$924	\$874 + \$174= 1,048

\* All non-U.S. members pay a \$14 Paper360 postage fee.

#### Cancellation Policy

If you have to cancel, your full registration fee will be refunded if TAPPI's Registration Department receives written notification (fax acceptable at +1.770.446.6947) by May 6, 2012. There will be a 50% refund for all written cancellations made after May 6 but no later than May 28, 2012. After May 28, no refunds can be issued. Substitutions, however, will be accepted any time without a penalty.

#### Wire Transfers

Need to make a Wire Transfer for payment? Call 1.800.332.8686 (US); 1.800.446.9431 (Canada) or +1.770.446.1400 (Worldwide) or email [memberconnection@tappi.org](mailto:memberconnection@tappi.org) for details.

#### Visa Letters

If you need a letter from TAPPI to apply for a travel visa, please register first and then contact Piper James at [pjames@tappi.org](mailto:pjames@tappi.org) for your letter.

