



Nanotechnology in the news

This month, Canada-based Domtar and FPInnovations announced a new joint venture to build the world's first 1 metric ton/day commercial-scale nanocrystalline cellulose (NCC) demonstration plant at the Domtar Windsor, QC, pulp and paper mill site. Construction is to begin in coming weeks and will take approximately 20 months. Following the construction phase, under the joint venture agreement, Domtar and FPInnovations will explore the commercial viability of producing NCC on a larger commercial scale.

NCC is a renewable, recyclable, and abundant nanomaterial made of cellulose fibers from the wood pulp manufacturing process. NCC imparts unique properties that can improve paper characteristics and lead to creation of novel bionanocomposites. Domtar notes that the properties of NCC will provide new opportunities in a wide range of applications for a variety of sectors and markets, including aerospace, automotive, chemical, textile, and forest products.

At the 2010 TAPPI International Conference on Nanotechnologies for the Forest Products Industry, the impact of this new demonstration plant will be analyzed in detail, along with other NCC and nanofibrillar cellulose (NFC) developments. Held for the first time outside North America from September 27 - 29, in Espoo, Finland, this truly international event features more than 80 expert speakers from around the world who work in a variety of nanotechnology disciplines.

For example, Dr. Hadi Mahabadi, vice president and center manager for the Xerox Research Centre of Canada, will present a keynote speech on "Bio-based nanoparticles and a greener printing industry." Dr. Hiroyuki Yano, professor at the Research Institute of Sustainable Humanosphere, Kyoto University, will speak about his research on extraction of nanofibers from biomass resources such as wood, plant fibers, and crab and shrimp shells.

Nanocellulosics & the biorefinery

Through five presentations, one particularly unique track at the 2010 Nanotechnology Conference looks at the potential of combined production of nanocellulose and ethanol in a biorefinery environment. A session from X.L. Luo, R. Sabo, C. Clemons, and J.Y. Zhu (a *TJ* editorial board member) will discuss the technical aspects of integrated production of nanocellulose with ethanol from woody biomass, explaining how production of high-value nanocellulose can improve the economic viability of cellulosic ethanol.

In another presentation, Martha Herrera, Jackson A. Etang, Aji P. Mathew, and Kristiina Oksman explore use of industrial bio-residues as a source of raw material for industrial production of cellulose nanocrystals. The residue, obtained from a bioethanol pilot plant, was first purified using chemical extraction and bleaching, and then separated to nanocrystals by mechanical treatments. Atomic force microscope studies showed that simple ultrasonication and homogenization processes produced

nanosized crystals. For more information on the nanotechnology conference, visit www.tappi.org/10NANO.

Sustainability at PEERS

The pulp and paper industry is constantly questioned in terms of its environmental impact, but one look at the PEERS Conference Program shows just how seriously members of our industry take the topic of sustainability. This year, sustainability-related presentations run throughout business, power and energy, environmental, and recycling sessions at the 2010 TAPPI PEERS Conference, scheduled for October 17-21 in Norfolk, VA.

The Environmental Program presents research on green technologies, such as starch-based polymers as an alternative to synthetics in waste water treatment, and anaerobic digesters that reduce sulfur components in waste water from sulfite pulping processes. The Energy, Power, and Recovery Program explores the latest tactics for reducing fuel use and boosting power generation throughout the mill.

Located with PEERS, the 9th Research Forum on Recycling features a robust program that includes an in-depth review of digital print media's impacts on mill technology and testing, including measurement methods for digital inks and toners. Organized by PIMA, the Business Program includes expert panelists that tackle carbon management topics and provide critical updates on new Boiler MACT regulations. For more information, visit www.tappipeers.org.

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