



International Conference on Nanotechnology for the Forest Products Industry

Nanotechnology from Research to Applications



Exploring cutting edge research, development and deployment of nanotechnology science and technology for the global forest products community.

Designed to meet the needs of:

- Professionals in product development, sales, and marketing
 - Forest product industry, university, and government researchers
 - Nanotechnology researchers

Key Topics:

- Nanotechnology applications in papermaking
- Environmental Health and Safety discussions
- Future directions including industry priorities
- Forest materials-based nano-manufacturing
 - Grant programs in nanotechnology R&D
 - Nanotechnology industry perspectives

Hyatt Regency St. Louis

June 25 – 27, 2008

St. Louis, MO USA



www.tappi.org/08nano

800-332-8686 (US) • 800-446-9431 (Canada)

+1 770-446-1400 (Worldwide)

Symposium Overview

The 2008 International Conference on Nanotechnology for the Forest Products Industry is co-sponsored by the Forest Products Society. It is built around the theme "Nanotechnology from Research to Applications". Its strong content makes it a "must attend" event, as nanoscience is poised to transform the forest products industry.

The program features presentations around a wide range of science and technology-focused topics:

- Nanotechnology industry perspectives
- Nanotechnology applications in papermaking, paper coating, printing, biorefining, and lignin biodegradation
- Forest materials-based nano-manufacturing

Symposium Leadership

Nanotechnology Steering Committee

Co-Chair **Dr. J Philip E. Jones**, Imerys
 Co-Chair **Theodore H. Wegner**, US Forest Service, Forest Products Laboratory
 Secretary, **Jane Kohlman**, US Forest Service, Forest Products Laboratory



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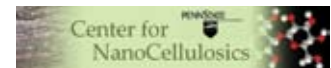
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Dr. E. Clayton Teague
*Director National
 Nanotechnology
 Coordinator Office (NNCO)*
Session 1



Dr. Clayton Teague has been Director of the federal National Nanotechnology Coordination Office (NNCO) since April 2003. Established in 2001, the NNCO is the secretariat to the Nanoscale Science, Engineering and Technology Subcommittee of the NSTC. As such, the NNCO provides day-to-day technical and administrative support to the NSET Subcommittee and assists in the preparation of multi-agency planning, budget and assessment documents. The NNCO is the point of contact on federal Nanotechnology activities for government organizations, academia, industry, professional societies, foreign organizations, and others to exchange technical and programmatic information. In addition, the NNCO develops and makes available printed and other materials as directed by the NSET Subcommittee as well as maintains the NNI (National Nanotechnology Initiative) Web site.

At NIST (National Institute of Standards & Technology) since 1972, Dr. Teague has designed, constructed, and used precision instrumentation for ultra-high accuracy dimensional metrology of surfaces and micrometer to nanometer-scale features. Beginning with his metal-vacuum-metal tunneling work in the 1970's, he continued to work with such precision instrumentation as scanning tunneling microscopes, atomic force microscopes, displacement and phase-measuring interferometry, stylus instruments, flexure stages, and light scattering apparatus. Because the laboratory and building environments were always factors in the ultimate performance of these instruments, the subject of this workshop has been an ongoing topic of great interest.

Dr. Teague is a member of the American Society for Precision Engineering, has served twice as the Society's President, and is a fellow of the UK Institute of Physics. He served as Editor-in-Chief of the international journal *Nanotechnology* for ten years and is currently a member of the Editorial Board of the journal. He holds a BS and MS in physics from the Georgia Institute of Technology and a PhD in Physics from the University of North Texas. He has authored or coauthored 70 papers, has presented 50 invited talks in the technical fields described, and jointly with colleagues, has six patents.

Dr. Teague has received the Gold Medal, Silver Medal, and Allen V. Astin Measurement Science Award from the Department of Commerce, the Kilby International Award by the Kilby Awards Foundation, and an IR-100 Industrial Research and Development Award for his work.

Dr. Nils Petersen
*Director General, NRC National
 Institute for Nanotechnology
 (NINT)*
Session 5



Nils Petersen is the Director General of the National Institute for Nanotechnology, joining the National Research Council in 2004 after three years as Vice-President (Research) at the University of Western Ontario.

Dr. Petersen received his B.Sc. Honours in Chemistry from The University of Western Ontario in 1972. He went on to receive his PhD in Chemistry from the California Institute of Technology in 1978. After positions at Cornell University and Washington University Medical School, he returned to The University of Western Ontario's Department of Chemistry as a faculty member in 1981. He was Chair of the department from 1995 to 1999. From 1993 to 1995, he was Associate Dean of the Faculty of Graduate Studies; from 1999 to 2000 he served as Associate Vice-President (Research) and Acting Vice-President (Research).

Dr. Petersen is a Fellow of the Chemical Institute of Canada.

Dr. Petersen currently serves as a member of several boards of not-for-profit organizations including the Canadian Light Source (CLS), the Canadian Microsystems Corporation (CMC), the California Nanosystems Institute (CNSI), the Institute for Genetics of the Canadian Institutes for Health Research (IG-CIHR) and the NRC Institute for Microstructural Sciences (NRC-IMS).

Dr. Petersen's current research in membrane biophysical chemistry focuses on intermolecular interactions in biological membranes, particularly the study of the dynamics and distribution of molecules within the membrane; on the function of lung surfactants in healthy and diseased lungs and on characterization of nanoparticles and their interaction with cell surfaces. Dr. Petersen continues his academic pursuits as a Professor of Chemistry at the University of Alberta.

Shawn Murdock
*Executive Director,
 NanoBusiness Alliance*
Session 11



Prior to becoming the Executive Director of the NanoBusiness Alliance, Shawn Murdock was the Executive Director and a founding board member of AtomWorks, an initiative formed to foster nanotechnology in Illinois and more broadly throughout the Midwest.

Mr. Murdock has been very active in nanotechnology trade and economic development issues. He helped to organize and execute the first Nanotechnology Trade Mission to Europe in conjunction with the NanoBusiness Alliance and the U.S. Department of Commerce. He has also been engaged with senior officials of the U.S. Department of Commerce's Technology Administration on the potential impact of export control issues on nanotechnology development and commercialization.

Mr. Murdock received his Masters in Business Administration and Masters in Engineering Management from Northwestern University. He holds a BA in Economics from the University of Notre Dame.

Dr. Jo Ann Ratto
*Project Officer, U.S. Army
 Natick Soldier Center*
Session 16



Dr. Jo Ann Ratto is a Polymer Research Engineer with the U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC) Natick, MA, where she has been working for over 18 years. Her experience spans a variety of fields involving nanocomposites, biodegradable polymers, structure-property relationships of polymers, extrusion processing, and membranes. She is the principal investigator of several environmental projects focused on decreasing the solid waste for the military food packaging.

Dr. Ratto received her Bachelors of Arts in Chemistry from College of the Holy Cross, Worcester, MA and received her Masters of Science and Doctorate of Engineering in Plastics Engineering from the University of Massachusetts Lowell.

Dr. Michael T. Postek
*Assistant to the Director
 for Nanotechnology and
 Nanomanufacturing
 Program Manager*
Session 22



Dr. Michael T. Postek is the Chief of the Precision Engineering Division and Program Manager of the Nanomanufacturing Program in the Manufacturing Engineering Laboratory at the National Institute of Standards and Technology (NIST). Dr. Postek also functioned as the Assistant to the NIST Director for Nanotechnology and he is both a nationally and internationally recognized expert in nanometrology particularly scanning electron microscope (SEM) particle and semiconductor critical dimension metrology. Dr Postek received his B. A. from the University of South Florida (1973); M. S. from Texas A&M University (1974); Ph.D. from Louisiana State University (1980) and an Executive M. S. in Technology Management from the University of Maryland (1997).



Pub & Poster Sessions

Learn about new research findings and network with peers and presenters at the Pub & Poster Sessions:

5:45 – 7:30 PM, Wednesday, June 25, 2008

5:45 – 7:30 PM, Thursday, June 26, 2008

Student Poster Competition!!

Student posters in any area/aspect of nanotechnology are eligible for the competition. The top two student posters will be awarded \$500. All undergraduate and graduate students attending the conference are encouraged to apply. Competition guidelines, procedures and application forms can be obtained at www.tappi.org/08nano. Applications are due no later than May 28, 2008.

Environmental Health and Safety Panel

Wednesday, June 25, 2008, 9:00 – 10:30 AM

Environmental Health and Safety remain ongoing concerns especially in an era of new technologies and new solutions. Join us for a review of key questions that are important to the nanotechnology community. Is Occupational Safety and Health nanotechnology in the workplace important to you? How about evaluating the safety of nanomaterials? Would you be interested in a presentation covering nanotechnology from an EPA perspective? If you answered yes to one or more of these questions, plan to attend a lively panel featuring speakers from NIOSH, ENVIRON, and EPA on these very topics.

Interactive Special Interest Group Meetings

Friday, June 27, 2008, 10:45 AM – 12:15 PM

Continuing with a desire to respond to important application challenges, there will be two special interest groups who plan to meet over lunch. One session will focus on Paper Coatings while the other deals with Liberation and Characterization of Cellulose Nano-Crystals. Past attendees have enjoyed the interactive nature of these sessions where they have access to both excellent content and subject matter experts with whom to network and collaborate. Plan to be part of the mix!

Wednesday, June 25, 2008

8:00 – 8:45 AM

Session 1

NNI Contribution to Nanotechnology Commercialization

Keynote Speaker: **Clayton Teague**,
National Nanotechnology Coordination Office

9:00 – 10:30 AM

Session 2

Environmental Health and Safety Panel Discussion

Session Chairs: **Robert Fisher**, National Council for Air and Stream Improvement (NCASI), **John Festa**, American Forest & Paper Association (AF&PA)

- "Occupational Safety and Health Nanotechnology in the Workplace"
Charles Geraci, National Institute for Occupational Safety & Health (NIOSH)
- "Evaluating the Safety of Nanomaterials"
Annette Santamaria, ENVIRON
- "Nanotechnology—An EPA Perspective"
James Alwood, Environmental Protection Agency (EPA)

10:45 AM – 12:15 PM

Session 3

Characterization and Measurement of Nanoscale Structures and Properties I

Session Chair: **James F. Beecher**, USFS Forest Products Laboratory

- "Raman Analysis and Imaging of Cellulose Materials – Wood Cell Wall and Nanocellulose-Polypropylene Composite"
Umesh Agarwal, USFS Forest Products Laboratory
- "Characterization of Cell Walls Treated with Ethylene Glycol Using Nanoindentation"
Joseph Jakes, USFS Forest Products Laboratory
- "Tuning the Release of Active Components from Nanoparticles by Defining the Crystallinity of the Particle Core"
Andreas Nystrom, Washington University-St. Louis

10:45 – 12:15 PM

Session 4

Nanobiotechnology and Wood Quality

Session Chair: **Udaya Kalluri**, Oak Ridge National Laboratory

- "Carbon Nanofiber Arrays: Cell Penetrant Probes for Manipulation of Molecular Scale Events"
Tim McKnight, Oak Ridge National Laboratory
- "Nanomechanical Properties of Biologically Significant Microstructural Elements of Wood"
Valery N. Bliznyuk, Western Michigan University

Wednesday, June 25, 2008

- “Nanoscale Imaging Plant Cell Wall Biomass Using Non-Destructive Microscopy and Spectroscopy”
Shi-You Ding, National Renewable Energy Laboratory

12:30 – 2:00 PM Lunch

Session 5

Nanotechnology Perspectives from the National Research Council (Canada)

Keynote Speaker: **Nils Petersen**, NRC National Institute for Nanotechnology

2:15 – 3:45 PM

Session 6

Advancements in Lignin Biodegradation

Session Chair: **Jeff Catchmark**, Penn State University

- “Modifying Lignin Biosynthesis by Incorporation of Tyrosine-Containing Peptides”
Haiying Liang, Penn State University
- “A Novel Method for Carbon Nanotube Production and the Mechanisms Involved”
Barry Goodell, University of Maine
- “Elucidating Lignin-Polyelectrolyte Interactions Through Selective Modification of Lignin”
Karthik V. Pillai, Virginia Tech

2:15 – 3:45 PM

Session 7

Nanomanufacturing Issues and Opportunities

Session Chair: **Joe Bozell**, University of Tennessee

- “Workplace Assessments for Nanotechnology: Benefits of a Proactive Approach”
Brenda Barry, ENSR Corporation
- “From the Laboratory to Fabrication: Nantero, A Nanotechnology Commercialization Story”
Brent Segal, Nantero
- TBA, Oak Ridge National Laboratory

4:00 – 5:30 PM

Session 8

Surface Modification and Characterization

Session Chair: **Pete Lancaster**, University of Washington/GR International

- “Latest Developments in Nanotechnology for Coatings”
John W. Du, BYK-Chemie
- “Micropatterning of Cellulose Nanocrystals by Inkjet Printing”
Fernando Navarro, Virginia Tech
- “A New Paper Coating Nanotechnology with Unique Characteristics to Improve Inkjet Print Density”
Martha P. Wild, EKA Chemicals Inc.

4:00 – 5:30 PM

Session 9

Reinforced and Interfacial Structures

Session Chair: **Siqun Wang**, University of Tennessee

- “Thermoplastic Nanocomposite Based on Cellulose Nanocrystals and Polyethylene Terephthalate (Pet)”
Alper Kiziltas, University of Maine
- “Nanocomposite-based Lignocellulosic Fibers: Influence of Lignin on Multilayer Film Structure and Performance”
Zhiyuan Lin, Virginia Tech
- “Young’s Modulus of Cellulose Fibrils Measured Using Atomic Force Microscopy”
Siqun Wang, University of Tennessee

5:45 – 7:30 PM

Session 10 Conference Pub

Conference Reception, Poster Session and Vendor Displays I

Session Chairs: **Phil Jones**, Imerys; **Theodore H. Wegner**, USFS Forest Products Laboratory

Thursday, June 26, 2008

8:00 – 8:45 AM

Session 11

Insights from NanoBusiness Alliance

Keynote Speaker: **Sean Murdock**, NanoBusiness Alliance

9:00 – 10:30 AM

Session 12

Colloid/Surface Science I

Session Chair: **John Westland**, Weyerhaeuser

- “Physical and Chemical Cellulose Surface Modification”
Sergiu Coseri, Petru Poni Institute of Macromolecular Chemistry
- “Nanofibres Produced from TEMPO-oxidized Cellulose III”
Denilson de Silva Perez, Institut Technologique FCBA
- “Washless Multi-Nano-Layered Fiber Preparations”
George A. Grozdits, Louisiana Tech

9:00 – 10:30 AM

Session 13

Applications Roundtable I

Panel Moderator: **Phil Jones**, Imerys

- “Fibrous/Engineered Fillers for the Paper Industry”
Pete Lancaster, University of Washington/GR International

Thursday, June 26, 2008

- "Preparation and Physical Properties of Superhydrophobic Paper Products"
Yulin Deng, Georgia Institute of Technology

- "Nanotechnology for Military Rations"
JoAnn Ratto, US Army Natick Soldier Research, Development & Engineering Center

10:45 AM – 12:15 PM

Session 14

Nanomaterials, Properties and Applications

Session Chairs: **Tim Rials**, University of Tennessee

- "Nanoscale Composite Materials"
Joe Bozell, University of Tennessee
- "Manufacture of Nanocellulose by High-Pressure Homogenizer"
Sun Young Lee, Korea Forest Research Institute
- "Application of Nanoindentation to Paper"
Robert Rowlands, University of Wisconsin-Madison

10:45 AM – 12:15 PM

Session 15

Self-Assembly/Biomimicry

Session Chair: **Pete Lancaster**, University of Washington/GR International

- "Effect of Crystalline Phase on the Optical Properties and Photocatalytic Activity of TiO₂ Nanoparticles Toward Photocatalytic Paper"
Seonghyuk Ko, Western Michigan University
- "The Use of Cellulose Nanocrystal for Templated Synthesis of Mono- and Biometallic Nanoparticles"
Yongsoon Shin, Pacific Northwest National Laboratory

12:30 – 2:00 PM Lunch

Session 16 – "Greening the U.S. Army"

Keynote Speaker: **JoAnn Ratto**, US Army Natick Soldier Research, Development & Engineering Center

2:15 – 3:45 PM

Session 17

Nanocomposites

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

- "Cellulose Infiltrated Carbon Nanotube Composites as Supercapacitors and Batteries"
Trevor Simmons, Rensselaer Polytech Institute
- "Cellulose Nanocrystal Reinforced Polyolefin Composites"
Ronald C. Sabo, USFS Forest Products Laboratory
- "A DNA Based Method for Directed Self Assembly of Cellulose Nanocrystals into Advanced Nanomaterials"
John Simonsen, Oregon State University

2:15 – 3:45 PM

Session 18

Nanotechnology Resource Centers

Session Chair: **Robert Moon**, USFS Forest Products Laboratory

- "NanoHUB.org: Cyberinfrastructure for Nanotechnology Research and Education"
Robert Moon, USFS Forest Products Laboratory
- "The Physiological Sensing Facility: Development of Advanced Research Technology for Biological Sensing"
Marshall D. Porterfield, Purdue University
- "The Nanobiotechnology Center at Cornell University: Research, Out-reach, and Knowledge Transfer"
Harvey Hoch, Cornell University

4:00 – 5:30 PM

Session 19

Nanostructure/Nanoscale Optical, Mechanical, Thermal and Electrical Interactions/Nanosensors

Session Chair: **Salman Aziz**, Integrated Paper Services

- "Electrical and Photoelectrical Properties of Polyaniline Modified Poly (vinylidene fluoride) Latex Films"
Margaret K. Joyce, Western Michigan University
- "Embedding of Carbon Nanotubes on Silicon Substrates for Use in Solar Cells"
Abhishek Kumar, Stanford University
- "Interaction of Water and Cellulose Cellulose Aggregate Fibrils During Isothermal Drying as Characterized by High Resolution Thermogravimetric Analysis"
Richard A. Venditti, North Carolina State University

4:00 – 5:30 PM

Session 20

Grant Programs in Nanotechnology R&D

Panel Moderator: **Catalino Blanche**, USDA CSREES

- **Chavonda Jacobs-Young**, USDA CSREES
- **Martha Otto**, Environmental Protection Agency (EPA)
- **Hongda Chen**, USDA CSREES
Huangfu Ehr-Ping, US Department of Energy, ITP
- **David Stepp**, US Department of Defense (Advance Materials)

5:45 – 7:30 PM

Session 21

Conference Pub, Conference Reception, Poster Session and Vendor Displays II

Session Chairs: **Phil Jones**, Imerys; **Theodore H. Wegner**, USFS Forest Products Laboratory

Friday, June 27, 2008

8:00 – 8:45 AM

Session 22 – “Nanotechnology: Important Link between Trees and Airplanes”

Keynote Speaker: **Mike Postek**, National Institute of Standards and Technology (NIST)

9:00 – 10:30 AM

Session 23

American Forest & Paper Association (AF&PA) Agenda 2020 – Panel Discussion

Panel Moderator: **John Cowie**, AF&PA
Agenda 2020

- “Cross-Industry Issues in Nano-materials Manufacturing Workshop”
Anne Chaka, National Institute of Standards and Technology
- “Predictive Modeling Consortium”
Dan Coughlin, Sappi Fine Paper
- “Agenda 2020 Technology Alliance – Nanotechnology Initiative”
Phil Jones, Imerys
- “DOE-ITP Nanomanufacturing Issue”
Huangfu Ehr-Ping, US Department of Energy, ITP
- “Nanotechnology in Food Packaging”
Hongda Chen, USDA CSREES

9:00 – 10:30 AM

Session 24

Colloid/Surface Science II

Session Chair: **Orlando Rojas**, North Carolina State University

- “From Nano to Paper Machine Scale”
Joakim Carlen, Eka Chemicals
- “The Production of Cellulose Nanofibers from Wood Pulps”
Douglas W. Bousfield, University of Maine
- “Nanofibrillated Cellulose Fibers: Where Size Matters in Opening New Markets to Nanofiber Usage”
Edward C. Homonoff, Edward C. Homonoff & Associates

10:45 AM – 12:15 PM

Session 25

Characterization and Measurement of Nanoscale Structures and Properties II

Session Chair: **James F. Beecher**, USFS Forest Products Laboratory

- “Characterization of Cellulose Nanocrystal Surfaces by SPM”

Robert Moon, USFS Forest Products Laboratory/Purdue University

- “Nanomechanical Properties of Wood Cell Walls as Affected by Wood Processing”

Cheng Xing, University of Tennessee

- “Characterization of Non-derivatized Plant Cell Walls Using High-resolution Solution-state NMR Spectroscopy”

Daniel J. Yelle, USFS Forest Products Laboratory

10:45 AM – 12:15 PM

Session 26

Applications Roundtable II

Panel Moderator: **Phil Jones**, Imerys

- “A Nanotechnology-Driven, Computer-Controlled Highly Sustainable Process for Making Paper and Board”

John Penniman, Paper Chemistry Laboratory, Inc.

- “Characterization of Wood Polymer Nanocomposites Made of Melamine-Urea-Formaldehyde and Layered Silicate Clays”
Xiaolin Cai, FPInnovations - Forintek

- “Nanocomposites Coatings for Wood Flooring”
Veronic Landry, FPInnovations - Forintek

12:30 PM – 2:30 PM

Session 27

Working Lunch

Interest Group/Focus Group I

Paper Coatings

Panel Moderator: **Tony Lyons**, Imerys

Session 28

Working Lunch

Interest Group/Focus Group II

Liberation and Characterization of Cellulose Nano-Crystals

Panel Moderators: **Alan Rudie**, USFS, Forest Products Laboratory
Forest Service & **Steve Masia**, Sappi Fine Paper

- **Richard S. Reiner**, USFS Forest Products Laboratory

- **Richard Berry**, FPInnovations

- **Robert Moon**, USFS, Forest Products Laboratory/Purdue University

The Forest Products Society

Meet the co-sponsor www.forestprod.org

The 2008 International Conference on Nanotechnology for the Forest Products Industry immediately follows the Forest Products Society's (FPS) 62nd 2008 FPS International Convention (IC). The 2008 IC will include special activities in recognition of the important role that students play in regard to the future of the forest products industry. These will include a Student Appreciation Luncheon on Sunday afternoon, immediately followed by a Student Wood Science Bowl. An outstanding General Session titled "Working Together to Meet the Challenge of Change" will take place on Monday morning.

This session will include a candid discussion of challenges facing the North American forest products industry, and of potential solutions to these challenges. It will be conducted in a debate-style format and participants will include industry, association and government leaders.

A total of 20 Technical Sessions will be held, beginning on Sunday afternoon and running throughout the day on Monday and Tuesday, covering a multitude of forest products and wood science subject areas. More than 80 poster presentations will also be presented during two separate forums on Monday and Tuesday.

The FPS IC will conclude on Tuesday evening with the annual Paul Bunyan Party. Attendees will enjoy drinks, dinner, entertainment and spectacular views of the riverfront and St. Louis skyline 42 stories above the streets of St. Louis at Kemoll's Top of the Met restaurant.

For more information about this convention, visit <http://www.forestprod.org/confic08.html>. If you are unable to attend the convention but would like to take advantage of the outstanding networking opportunities at the Paul Bunyan Party, you will find this event listed on the registration form in this brochure.

General Information

Hotel Information:

Hyatt Regency St. Louis
One St. Louis Union Station
St. Louis, MO 63103 USA
+1.314.231.1234 or 800.233.1234
www.stlouis.hyatt.com



Room Rates: Single/Double - \$145; Triple \$170; Quadruple \$195 + 14.99% tax. Hotel cut-off date is June 2, 2008 at 12:01 am. After this date, rooms that may be available will be at rates set by the hotel; these rates would be higher than the TAPPI group rate.

All reservations must be guaranteed by either a credit card or a first night's deposit. Individual guests are free to cancel up to 24 hours before the arrival date without penalty. Cancellations after the 24 hour time frame, individuals will be charged one room night plus tax. Any guest wishing to depart earlier than the original reservation departure date will incur a penalty of one night's room and tax, also the responsibility of the individual.

Airline

Delta is the official airline for this event. For special rates, visit www.tappi.org/08NANO and click on the Delta Airlines logo to be directed to the Delta site.

Ground Transportation

- Avis offers special discounts off regular rates for participants. To reserve your car, call 1.800.831.8000 and refer to the code AWD: #U226600.
- Hertz Save \$5 a day up to \$25 off your rental car. This special offer is valid one week before through one week after the event dates. Make your reservations on-line at www.hertz.com using your CDP# 1752380 and Promotional Code# 105825. Or call 1.800.654.2210 in the U.S.
- Also light rail Metrolink is available from Lambert International Airport to downtown.

REGISTER EARLY and SAVE!

Conference registration fees are only \$775 for TAPPI members and collaborating partners, and \$1165 for non-members who register by May 28, 2008. Special one-day registration options are also available. See the registration form in this brochure or online at www.tappi.org/08NANO for more complete details. Call toll free 800.446.9431 (Canada), 800.332.8686 (US), or +1.240.646.7042 to register if you have difficulty online or require additional registration.



REGISTRATION FORM

TAPPI-2355

1. WHAT TYPE OF COMPANY DO YOU WORK FOR?
(choose only one)

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- Paperboard Packaging Independent Converting Plant (4A0)
- Paperboard Packaging Headquarters (4AH)
- Independent Consultant: Engineering, Technical Production or Research (2)
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- Woodlands Operation (3)
- Flexible Packaging Converting Plant (4B0)
- Flexible Packaging Headquarters (4BH)
- Dealer or Distributor of Supplies (8)
- University Professor (9A)
- Full Time Student (9B)
- University Library (9C)
- Press (10A)
- Library (10B)
- Association (10C)
- Government (10D)
- Retired (13)
- Nonwovens (14)
- Printing/Graphic Arts (15)
- Allied to the Industry (12)
- Industry Customer (end user) (16)

2. WHAT IS YOUR PRIMARY JOB FUNCTION? (check one)

- Librarians – Corporate (A)
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- Corporate Management (B)
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- Traffic & Shipping (H)
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- Other Management & Administrative Personnel (I)
- Other: _____ (J)

3. WHAT IS YOUR PRIMARY INDUSTRY? (check one)

- Pulp Mill Only (P)
- Technical/R&D Facility/Headquarters (H)
- Paper/Paperboard Mill Only (R)
- Independent Operations or Converting Plant (O)
- Integrated Pulp/Paper/Paperboard Mill (D)

Do you require special accommodations for handicapped access? Yes No

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FIVE EASY WAYS TO REGISTER

- 1) Mail – TAPPI, P.O. Box 933644, Atlanta, GA 31193-3644, USA
- 2) Online – go to www.tappi.org/08nano
- 3) Fax completed registration form by fax to +1.770.209.7206
- 4) Phone 1.800.332.8686 (US), 1.800.446.9431 (Canada) or +1.770.446.1400 (Worldwide)
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Please circle: Mr. Ms. Mrs. Dr. Sr. Jr.

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Registration Fee (circle only one) • All fees in US Dollars.	March 16 to	After
	May 28, 2008	May 28, 2008
Member*	\$775	\$1,165
Non-Member	1,165	1,750
Single Day Member* indicate day attending: _____	425	640
Single Day Non-Member indicate day attending: _____	640	965
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Forest Product Society Paul Bunyan Dinner, June 24	75	75
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