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USDA FOREST SERVICE • FOREST PRODUCTS LABORATORY

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Researchers, Business Leaders to Explore Impact of Nanotechnology on Paper, Composites, Lumber Industries

MADISON, Wis.—Recognizing that nanotechnology—the science of understanding and controlling extremely small pieces of matter that have unique and novel properties—could revolutionize forest products industries worldwide, the USDA Forest Service's Forest Products Laboratory (FPL) is cosponsoring a conference to examine global scientific and economic trends that are shaping future technologies and markets. More than a hundred researchers, business leaders, and representatives of government agencies from the United States, Canada, Europe, and Asia are expected to attend the three-day meeting in Atlanta in April.

The program for the TAPPI 2006 International Conference on Nanotechnology for the Forest Products Industry, set for April 26 to April 28, includes two dozen sessions featuring scores of panelists and speakers from universities, industry, and government agencies and laboratories in the United States, Canada, Asia and Europe, many of them internationally recognized leaders in nanotechnology research, development, and deployment. Nine of the scheduled speakers are from FPL.

Their topics are aimed at helping attendees understand how nanotechnology can revolutionize forest products markets and how businesses can position themselves on the leading edge of nanotechnology. Topics range from strategic planning for the application of nanotechnology to highly technical topics such as the challenges involved in putting biosensors on paper. Other topics during the two-and-a-half-day conference will include sources of funding for research and development and some of the environmental, health and safety issues regarding nanotechnology.

In the United States alone, forest products industries, which include pulp, paper and wood products, employ some 1.1 million people and contribute more than \$240 billion annually to the nation's economy.

The conference is being managed by TAPPI, an association representing the pulp, paper, packaging and converting industries. For details and registration information or a complete program, contact TAPPI at (800)-332-8686 (US), (800)-446-9431 (Canada) or +1-770-446-1400. Registration can also be done online at www.tappi.org/06nano.

The nanotechnology conference is scheduled in conjunction with TAPPI's 2006 Coating and Graphic Arts Conference and Exhibit and their Coating and Papermakers Exhibit. All three events are scheduled for the Atlanta Marriott Marquis hotel and convention center.

In addition to TAPPI and FPL, the conference is being cosponsored by the USDA Cooperative State Research, Education and Extension Service (USDA CSREES), Agenda 2020-American Forest and Paper Association (AF&PA), University of Alaska-Fairbanks, West Virginia University, Sappi North America, Battelle-Pacific Northwest National Laboratory, American Chemical Society—Cellulose Division, Mississippi State University, North Carolina State University, University of Tennessee, University of Maine, USDA CSREES—Natural Resources and Environment, and USDA CSREES Plant and Animal Systems.

Additional collaborators include the Society of Wood Science and Technology, Materials Research Society, American Physical Society, Pulp and Paper Research Alliance, Forest Products Society, Pulp and Paper Technical Association of Canada, Zellcheming, International Academy of Wood Science, U.S. Environmental Protection Agency, Paper Industry Technical Association, Appita-the Technical Association of the Australian and New Zealand Pulp and Paper Industry, and the American Institute of Chemical Engineers.

In the fall of 2004, more than a hundred researchers from North America and Europe, with an interest in wood, paper or other forest products, gathered in Virginia to explore the possible role of nanotechnology in the forest products industry. They concluded that the future of the industry could depend on how well those industries embrace nanotechnology.

“Nanotechnology represents a major opportunity to generate new products and industries in the coming decades,” their report says.

For example, nanotechnology might permit the development of “intelligent” wood- and paper-based products that could incorporate built-in sensors to measure moisture, temperatures or pressure, or detect the presence of wood-decay fungi. According to the report, nanotechnology could have an even greater impact by leading to new ways to produce energy, chemicals and other products and processes that would enhance national energy security and benefit air and water quality as well as global climate change.

A nanometer is one billionth of a meter; a typical sheet of paper is about 100,000 nanometers thick. A nanoscale-size particle can contain anywhere from fewer than 100 to several thousand atoms. Nanoscale particles often exhibit unusual qualities that create the potential for products with new performance capabilities never before possible.

The USDA Forest Service Forest Products Laboratory was established in 1910 in Madison, Wis., with the mission to conserve and extend the country’s wood resources. Today, FPL’s research scientists work with academic and industrial researchers and other government agencies in exploring ways to promote healthy forests and clean water, and improve papermaking, wood products conversion, and recycling processes. Through FPL’s Advanced Housing Research Center, researchers also work to improve homebuilding technologies and materials. Information is available at FPL’s Web site: www.fpl.fs.fed.us.

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