

## **Nanotechnology Research and Development in the Forest Products Industry- the Green Connection**

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### ***Presentation***

**Abstract:** The U.S. forest products industry is working with the USDA Forest Service and the National Institute of Standards and Technology (NIST) while partnering with universities to research, develop, and deploy green nanotechnologies in a sustainable way. The forest products industry is a \$260 billion per year industry that accounts for 6.2% of U.S. manufacturing GDP. The American Forest & Paper Association Agenda 2020 Technology Alliance (AF&PA Agenda 2020) has adopted nanotechnology as one of its technology platforms to help to revitalize the industry. Partnering with the USDA Forest Service, NIST, and other federal agencies and Departments that are part of the National Nanotechnology Initiative (NNI) and members of the Nanoscale Science, Engineering and Technology (NSET) subcommittee, the Chief Technology Officers (CTO) Committee of AF&PA Agenda 2020 has identified three pre-competitive nanotechnology research areas that will be the foundation of the next generation of high performance forest-based products. The three areas are: 1) using nanotechnology to improve the strength to weight ratio of paper and wood-based structural materials, 2) developing new value-added photonic and electronic features for paper and forest products and 3) creating new revenue streams based on the production of innovative forest-derived nanomaterials. Research and development of specific nanotechnology and nanotechnology-enabled forest-based products in the preceding three pre-competitive areas will be conducted collaboratively. To formalize the public-private partnership, AF&PA Agenda 2020 signed a Consultative Board for Advancing Nanotechnology (CBAN) agreement with the NSET subcommittee through the National Nanotechnology Coordination Office (NNCO). Forest-fiber based nano-dimensional materials originate from cellulose photosynthesized by nature using carbon dioxide, water, and solar energy. Products produced from these cellulosic materials are sustainable, have the ability to store carbon throughout their service life, and can play an important roll in alleviating the negative impacts of climate change.