

The Forest Products Laboratory Research and Development USDA Forest Service



Emerging Forest Products Opportunities

**Presented By:
Michael T. Rains**

**USDA Forestry Research Advisory Council
February 18, 2015
Washington, DC**

FPL.1



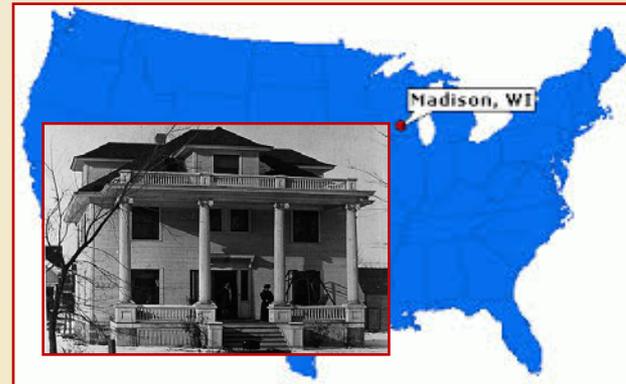
What We Will Cover...Quickly:



Emerging Forest Products Opportunities



The Forest Products Laboratory, Madison, WI:



Our Mission. "...To promote healthy forests and forest-based economies through the efficient, sustainable use of our wood resources."

Our Vision. "...Through innovation at the highest level, we enhance the quality of life of all Americans."



Emerging Forest Products Opportunities



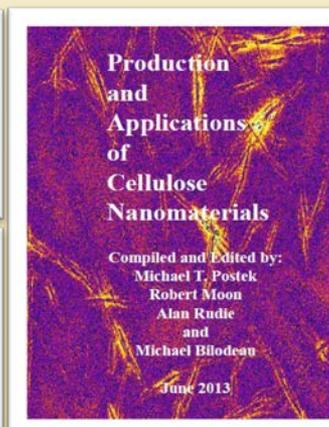
FPL.3

The Forest Products Laboratory:



FPL Fast Facts

- ❑ In operation since 1910.
- ❑ 164 employees, including 60 scientists.
- ❑ 8 research work units.
- ❑ A *new* Forest Products Marketing Unit.
- ❑ A *new* Termite Control and Science Unit.
- ❑ **The FPL:**
 - Makes America competitive.
 - Enhance the economy.
 - Creates new jobs.
 - Develops and transfers technology.
 - Strengthens the housing markets.
 - Helps create resilient forests.
 - Reduces wildfire risk and costs.
 - Serve *all* across the rural to urban land gradient.



Emerging Forest Products Opportunities



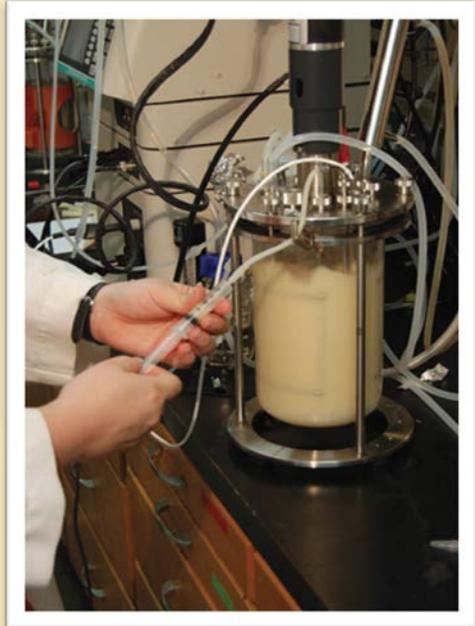
FPL.4

FPL's Science Themes:



Forest Products Laboratory Major Science Themes

1. Underutilized Woody Biomass
2. Nanotechnology
3. Biorefinery/Bioenergy
4. Advanced Composites
5. Advanced Wood Structures

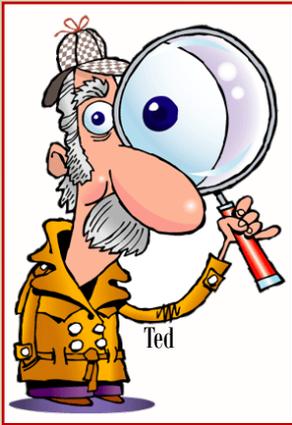


Emerging Forest Products Opportunities



FPL.5

Our Focus:

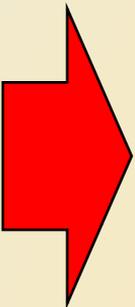


- 
1. Resilient Forests
 2. Improved Economy
 3. New Jobs
- 



Biomass Uses
As
Restorative Actions

Through: Effective Biomass Uses

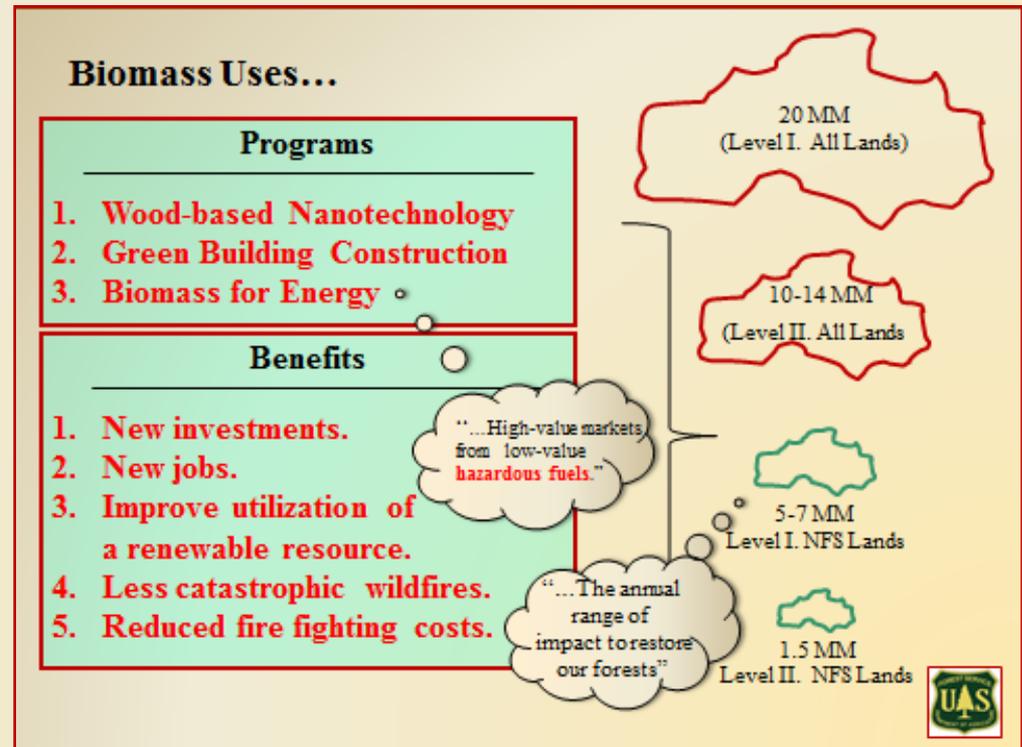
- 
1. Wood-Based Nanotechnology
 2. Green Building Construction
 3. Biomass for Energy
- 

“...Help create healthy, sustainable forests that are more resilient to disturbances through *restorative actions*.”



Creating Resilient Forests

Wood-based nanotechnology and other “biomass uses” offer a grand opportunity to create healthy, sustainable forest that are more resilient to disturbances through restorative actions...



Wood-based Nanotechnology

Nano.gov
National Nanotechnology Initiative

Nanotechnology 101 | Nanotechnology & You | About the NNI | Collaboration & Funding | Publications

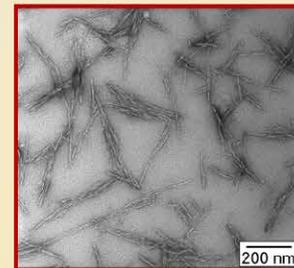
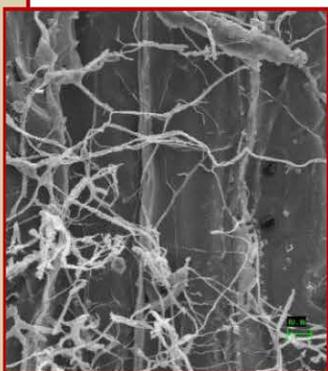
Cellulose Nanomaterials: A Path Towards Commercialization Workshop



Co-Sponsored by:



Forest Service, Washington D.C.



Emerging Forest Products Opportunities



FPL.8

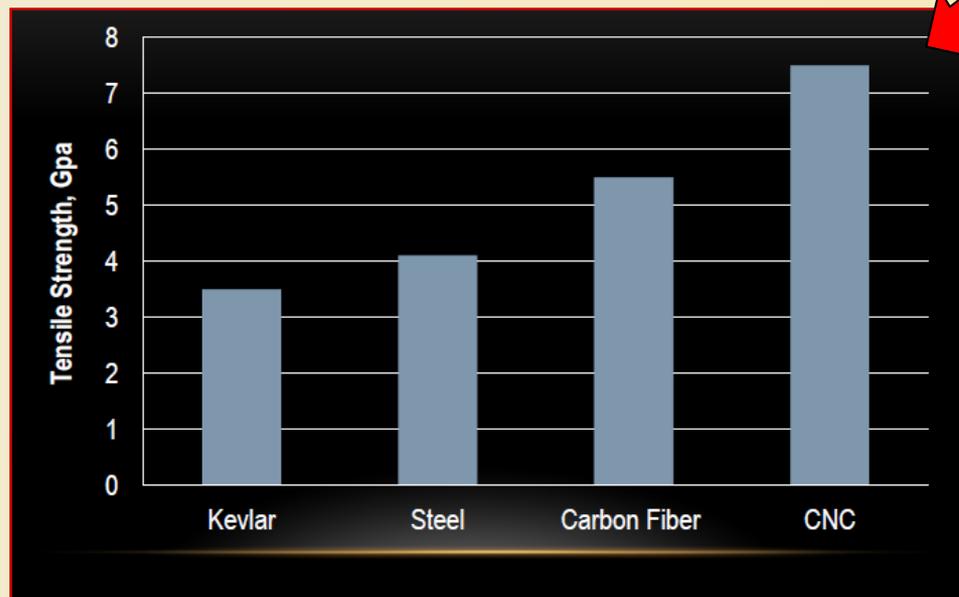
Wood-Based Nanotechnology



When added to other materials, “cellulose nanomaterials” (CNCs) help produce high-value products that are:

- Stronger
- Lighter
- Cheaper
- Renewable

Tensile strength of
CNCs.

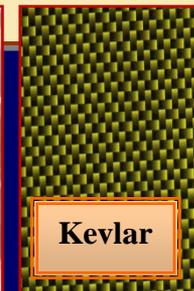


Wood-Based Nanotechnology



High-value, high volume products and applications...

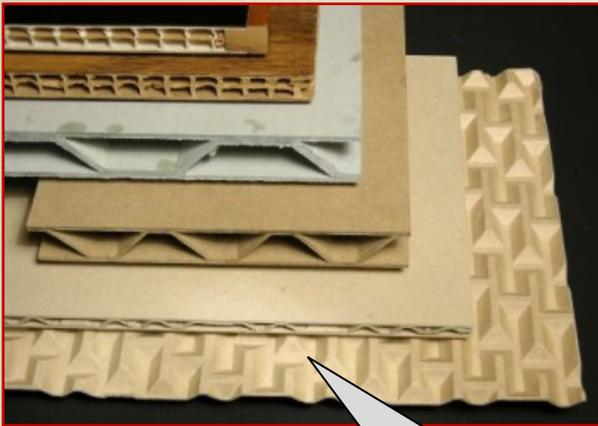
- Defense applications.
- Batteries.
- Super-capacitors.
- “Smart” paper.
- Paints, coatings & films
- Sporting goods.
- Building materials.



Emerging Forest Products Opportunities

Green Building Construction

Wood as a Sustainable Building Material



Advanced Composites

The “cannon”

Emerging Forest Products Opportunities



FPL.11

Public-Private Partnership

Banding together and sharing resources can make a huge difference in deploying a wood-based nanotechnology and other “biomass uses” to:

- Accelerate forest restoration.**
- Diversify our economy.**
- Create new jobs.**
- Reduce catastrophic fires.**
- Keep our forests healthy, sustainable and more resilient to disturbances.**

Examples

Federal Partners in Biomass Uses

Department of Agriculture (USDA); Department of Defense; Department of Energy; Department of Commerce; Environmental Protection Agency (EPA); National Science Foundation; National Institute for Occupational Safety & Health; National Institute for Science and Technology.

Non-Federal Partners in Biomass Uses

U.S. Endowment for Forestry and Communities; “Agenda 2020 Technology Alliance” (forest industry); Mississippi State University; Penn State University; University of California; Purdue University; Georgia Tech; Oregon State University; University of Tennessee; North Carolina State University; University of Maine.



Questions?



Connect with us:

Web: <http://www.fpl.fs.fed.us/>



The FPL

Emerging Forest Products Opportunities



FPL.14