Cellulose Nanomaterials – A Path Towards Commercialization

Michael Bilodeau
Director, Process Development Center
University of Maine
UMaine Process Development Center

Serving the Needs of Industry Since 1987

- Department of Chemical and Biological Engineering
- Not-for-Profit Contract Research Group
- Self Supporting
- Professional Staff
- Fee-for-Service Basis

Nanocellulose Commercialization Workshop - Washington, D.C.  May 21, 2014
UMaine CNF Pilot Facility

- Upgrade funded by grant from USDA Forest Service - 2012

- Capability
  - CNF Refiner
  - Ultrafine Grinder

- Capacity
  - 1 ton/day
  - Slurry form (3% solids)
UMaine CNF Pilot Facility

- Spray Dryer
  - Several kg/day capacity
UMaine CNF Pilot Facility

- Availability
  - Fee-for-service basis
  - Samples available
    - Kg to tonne quantities
    - CNF & CNC
    - Slurry & Dry
Cellulose Nanomaterial Samples Distributed

Since August 2012

- CNF - 4,612 lbs., dry basis
- CNC – 210 lbs., dry basis

- 162 Entities – 28 Countries
  - 102 Private Companies
  - 60 Universities/Government Labs
Commercial Scale-up
Release Base Paper Surface

Control – 208 X

CN 200 – 245 X

5% CNF added
Stain Results

Silicone Coated Release Base

A. Control Base  
Pilot paper machine samples

B. CN 200 Base  
5% CNF
Challenges and Opportunities in Manufacturing

• Turn-key production equipment
• Cost effective dewatering process
• Compatibility with hydrophobic matrices
• Metrology
Contacts

Michael Bilodeau, Director
Email: mbilodeau@maine.edu
Phone: 207-581-2387

Pros Bennett, Managing Director
Email: pbennett@maine.edu
Phone: 207-949-4176

www.umaine.edu/pdc