



Piloting cellulose nanofibrils

THE UNIVERSITY OF MAINE's Forest Bioproducts Research Institute is building a pilot-scale plant for manufacturing cellulose nanofibrils (CNF), a wood-based reinforcing material that is increasingly of interest to researchers worldwide looking for super-strong materials that could replicate synthetic plastics.

The pilot plant, which is being funded by a \$1.5 million grant from the U.S. Forest Service, will be the only one of its kind in the nation, and will serve as a source of the material for those who want to explore the uses of CNF. Currently, researchers and industrial companies who want to buy the material purchase it from sources in Japan and Germany.

Last April, UMaine and the Forest Products Laboratory of the national Forest Service began a research collaboration on conversion of wood components into novel nanomaterials, incorporating an array of nanomaterials into forest products to increase their functionality, durability, and end use performance; and developing new generations of high performance wood-based materials.

UMaine will be the sole supplier of CNF to researchers in a consortium of universities — Georgia Institute of Technology, North Carolina State University, Oregon State University, Pennsylvania State University, Purdue University and University of Tennessee.

Applications for the CNF material include automobile components, paint and coating additives, and water filters. Commercialization of cellulose nanofibrils and development of cellulose nanocomposites have been hampered by the lack of availability of CNF material in sufficient quantities to conduct commercially meaningful technology demonstrations.



Accelerating innovation

AN INITIATIVE called Blackstone Accelerates Growth designed to build regional innovation hubs supporting entrepreneurship and job creation has been launched with a \$3 million grant from Blackstone Charitable Foundation. Among the local partners in the initiative is the University of Maine, which will prepare a cadre of student interns who have had Innovation Engineering coursework offered through UMaine's Foster Center for Student Innovation. These students will support companies involved in innovation and entrepreneurship. In addition, UMaine's Innovation Engineering/Jump Start Program, created by inventor alumnus Doug Hall, will provide intensive coaching programs for companies looking to grow and transition to be part of an innovative economy.

Building a better clothespin

WITH ASSISTANCE from the University of Maine Advanced Manufacturing Center, an inventor from Winterport, Maine, has redesigned the traditional clothespin and is producing the patent-pending red, white and blue plastic clips for worldwide commercialization.

Designer Charley Earley calls his thin, round, 3-inch diameter, multiuse clipping device EKLIPSE.

"When you look at a traditional clothespin, there are disadvantages, which are widely accepted," Earley says. "With a traditional clothespin, you need to provide energy to pinch it. Fifty percent of the commonly accepted products has nothing to do with holding anything, which to me represented waste."

Spring-loaded clothespins can pop apart and the standard clothes peg without a spring is "weakest where it needs to be strongest, whereas EKLIPSE is only one piece, opens only as much as it has to and never has to be squeezed."

AMC staff and students created a CAD design of EKLIPSE, produced an ABS plastic prototype and conducted fatigue tests to be sure it works in both hot and cold environments.



Balanced advisories

TO FULLY ENABLE at-risk people to make healthy decisions about eating fish, government-issued advisory messages need to balance information about mercury-related health risks with details about health benefits, according to a new study by economists and health policymakers.

The researchers, led by University of Maine economist Mario Teisl, examined the effects of a statewide advisory issued by the Maine Center for Disease Control and Prevention about benefits and risks of fish consumption to at-risk women who are pregnant or nursing, or who may become pregnant, as well as children under age 8.

As a result of the Maine CDC advisory, some women reduced their fish consumption for a short time, often for only the duration of their pregnancy. But most importantly, women who read the advisory changed their eating habits, consuming more fish low in mercury, such as light tuna, while decreasing their intake of highly contaminated fish, such as white tuna.

