

## Director's Message



Richard Vlosky  
Director, Louisiana Forest Products  
Development Center, School  
of Renewable Natural Resources

Almost exactly three years after Louisiana and our neighboring states on the Gulf Coast felt the blow from two of the most severe natural disasters in history, hurricanes Katrina and Rita, hurricanes Gustav and Ike dealt a financial loss of an estimated \$3.8 billion and \$27 billion, respectively, primarily to Louisiana and Texas. Ike was the third costliest U.S. hurricane of all time, behind Hurricane Andrew of 1992 and Hurricane Katrina of 2005. Gustav is the worst storm to hit Baton Rouge in recorded history. Debris from thousands of downed trees still line neighborhood streets and homes are still bedecked with blue FEMA tarps on their roofs. Combined with a national economy in recession and two wars raging on foreign soil, this has surely been a difficult year. To quote the nation's President-elect, "the true strength of our nation comes not from the might of our arms or the scale of our wealth, but from the enduring power of our ideals: democracy, liberty, opportunity and unyielding hope." On behalf of all of us at the Louisiana Forest Products Development Center, I wish you all hope and faith in 2009.

## Cypress Mulch Study Shows Demand and Trends for Major U.S. Demand Sectors

Charles E. Clément, Extension Specialist and Richard P. Vlosky, Professor and Director

The use of Louisiana cypress (*Taxodium distichum*) in mulch has been the subject of heated debate for several years. In the fall of 2007, three major home-center retailers (Lowe's, The Home Depot and Wal-Mart) chose to no longer sell cypress mulch that came from Louisiana, citing environmental concerns – namely the deterioration of coastal wetlands. This has become a topic of controversy with parties for and against making strong arguments supporting their respective claims.

In 2008, the Louisiana Forest Products Development Center conducted a national survey of top home center retailers, nurseries and landscaper contractors

*(Continued on page 2)*



## 11th National Center for Wood Utilization Research Established

The U.S. Department of Agriculture's Cooperative State Research, Education and Extension Service has awarded the LSU AgCenter a grant to become the country's 11th Center for Wood Utilization Research (WUR). The wood research centers conduct research and product development spanning a broad spectrum of activities, said Dr. Allen Rutherford, director and Bryant Bateman Professor of Renewable Natural Resources in the LSU AgCenter's School of Renewable Natural Resources.

The 2008 CSREES grant provides funds for two LSU AgCenter projects:

1) Developing technologically feasible and economically acceptable

solutions for using wood fibers and used plastics to manufacture durable building materials.

2) Developing a recycling system to reuse and recycle decommissioned treated wood and the chemicals used to preserve it.

Wood fiber-plastics grant will focus on long-term durability and performance of the products and the recycling system will emphasize an economically viable and environmentally friendly closed loop recycling system. "Wood fiber-plastic composites are emerging as a viable alter-

*(Continued on page 2)*

to better understand need/use/demand for different types of tree-based mulch available on the market, and cypress mulch in particular. We were interested in attitudes and perceptions regarding cypress mulch because of recent controversies surrounding the supply and consumption of mulch originating in Louisiana. For the purposes of this article, the term mulch is used to indicate organic mulch made from trees (bark, pine straw or wood chips).

A questionnaire was mailed to the top 500 home center retailers, 250 wholesale nurseries and 250 landscape firms in the U.S., all based on sales in 2007. After taking into account undeliverable surveys, the adjusted response rates were as follows: home centers (17%), nurseries (32%) and landscapers (22%).

Results indicate that 27% of home center respondents sold mulch compared to 60% of nursery respondents and 64% of landscape contractors. These differences may be explained by the home center customer base, primarily consumers and contractors. Nurseries and landscapers specialize in landscape and garden maintenance therefore upkeep and mulch is a more significant part of their product line.

Table 1 indicates percent sales of different mulch types by sector. There are two distinct groups. Home center and nursery respondents primarily sell pine bark, cedar and cypress mulch while landscape contractors sell primarily pine bark, hardwood mulch and pine straw. When asked about their current sales of cypress mulch (Table 1), 35% of nursery respondents sell cypress mulch followed by landscape contractors (21% of respondents) and home center retailers (15% of respondents).

All respondents were asked if they thought they would be selling cypress mulch in 1 year and in 5 years (Figure 1). Respondents in each sector were fairly consistent with their responses for these time horizons. Nurseries are more likely to be selling cypress mulch in the future while home center respondents are least likely.

Finally, respondents were asked if they would: (a) consider purchasing cypress mulch that was certified to come from sustainable forests and was produced only from residue resulting from lumber production; and (b) if they would consider purchasing cypress mulch that was certified to come from sustainable forests and was produced from whole trees. Surprisingly, the responses were identical with 47% saying no and 53% saying yes to both questions. This indi-

Table 1. Mulch Sales by Mulch Type\* (percent of respondents) (rank)

	Pine Straw	Pine Bark	Cypress	Cedar	Hardwood	Other**
<b>Home Center (n=81)</b>	5%	<b>18 %</b> (1)	<b>15%</b> (3)	<b>17%</b> (2)	1%	7%
<b>Nursery (n=74)</b>	22%	<b>42%</b> (2)	<b>35%</b> (3)	<b>43%</b> (1)	23%	19%
<b>Landscape (n=53)</b>	<b>28%</b> (2)	<b>40%</b> (1)	21%	19%	<b>28%</b> (3)	19%

\*Multiple responses possible

\*\*redwood, hemlock, recycled, paper, plastic, rubber, composites

cates that almost half the respondents do not consider sustainability factors in their decision to sell cypress mulch.

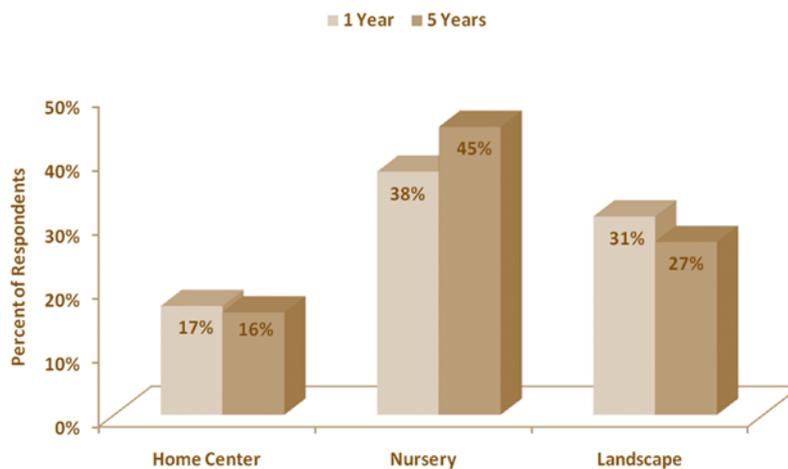
Results from this study indicate that few home center respondents sell tree-based mulch including cypress mulch nor do they have plans to do so in the future. Landscape contractor and nursery respondents are the main supply chain participants for mulch from the groups included in the study.

We suggest that continued sales of cypress mulch in the future, at least for 53% of all respondents, is contingent on trust that the mulch will come from sustainably managed forests and/or from

manufacturing residuals and NOT from whole trees.

It appears that the future is optimistic for mulch use in general and cypress mulch in particular due to continued respondent plans to carry these products. However, although there are benefits to consumers in using cypress mulch such as durability, insect resistance and aesthetics, environmental issues and concerns have already altered the landscape. Major home center chains have ceased to purchase cypress mulch from Louisiana and others may follow if strict and enforceable sustainability issues are not addressed.

Figure 1. Percent of respondents that will sell Cypress Mulch in 1 and 5 Years



## 11th National Center Established (Continued from page 1)

native to glass fiber-reinforced composites in various applications,” Rutherford said. “They offer some inherent technical advantages over conventional composites like low cost, light weight, competitive mechanical properties, reduced energy consumption and a ‘green’ concept.”

In addition to Rutherford, who will coordinate the entire project, other

center members include Drs. Richard Vlosky, Todd Shupe, Qinglin Wu and Cornelis de Hoop, all in the AgCenter’s Louisiana Forest Products Development Center. Researchers at the LSU AgCenter’s Calhoun Research Station will also be involved in this and future WUR research.

# Louisiana Biomass Database Comes Online

## Niels de Hoop, Professor

Through a collective effort from several departments, the LSU AgCenter has posted a database of biomass quantities on its Web site that can be accessed interactively. Users who are interested in knowing the quantities of biomass produced in Louisiana at the parish level can click on a map and learn about the types and quantities of biomass produced.

The types of biomass listed include wood mill waste (such as sawdust), agronomic mill waste (such as sugarcane bagasse), logging residues, forest biomass, field crop residues (such as rice straw), collectable animal manure and human municipal solid waste. Logging residues include limbs and tree tops that are usually left in the woods because they normally have no commercial value. Forest biomass includes small trees and larger trees that are too rough to be suitable for lumber or plywood. Field residues vary from year to year because farmers have a choice of crops to plant each year. Therefore, the database includes last year's production, a five-year average and a 25-year average.

Some consumption data are listed on the Web site, including wood mill residues utilized in-house or sold to other users. Nearly all of the wood residues from the primary forest products industry (sawmills, etc.) are already utilized. However, only about half of the wood residues from the secondary industry is already utilized. Still, this is an improvement over 1994, when less than 1 percent of the wood residues from Louisiana's secondary industry was utilized.

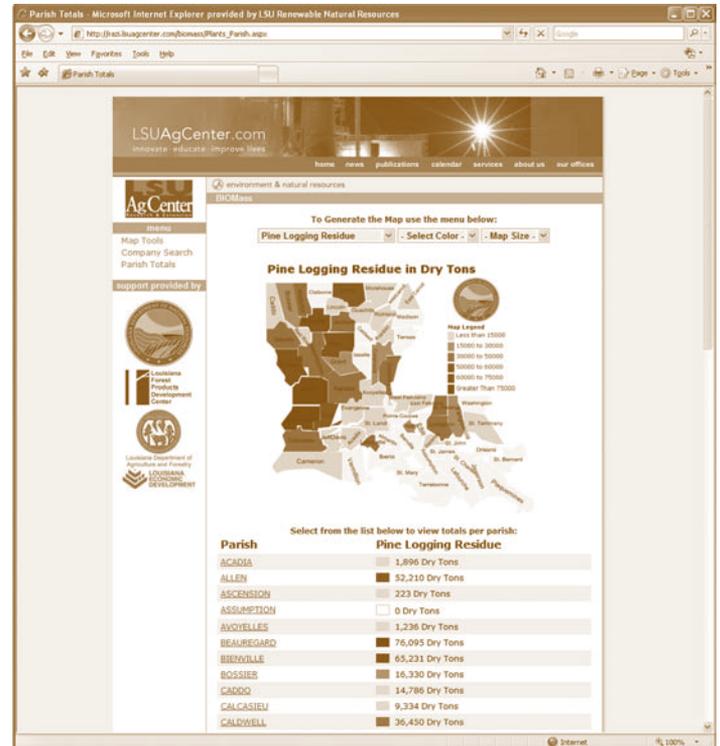
This database was organized because there has been a strong interest lately in utilizing biomass for energy. Literally dozens of companies are considering building a novel biomass-utilizing facility, but they need to locate a good site that has logistical support and an adequate supply of affordable biomass. This database is designed to give potential investors some starting points for facility site location based on available biomass supply.

Users can go to [www.lsuagcenter.com/biomass](http://www.lsuagcenter.com/biomass) to see this site.

The principal investigators who contributed to this project are Drs. Niels de Hoop and Joe Chang of the Louisiana Forest Products Development Center; Dr. Gary Breitenbeck of the

School of Plant, Environmental and Soil Sciences; Dr. Rod Hendrick of the W.A. Callegari Environmental Center; Dr. Chandra Theegala of the Department of Biological and Agricultural Engineering and Fred Piazza of the Information Technology Department. The project was sponsored by the Louisiana Department of Natural Resources.

*The interactive Web site at [www.lsuagcenter.com/biomass](http://www.lsuagcenter.com/biomass) allows users to find concentrations of biomass supplies in Louisiana. This can be useful for determining potential site locations for facilities that want to use biomass for energy production or other products.*



## LFPDC's Extrusion Facility Is Up and Running!

The Engineering Composite Laboratory (ECL) at LFPDC has successfully installed and tested its new American Leistritz Micro 27 twin-screw extrusion machine. This state-of-the-art extrusion machine comes with fully automated computer control, real-time temperature/pressure monitoring, counter/co-rotation segmented screws, weight-in-loss (WIL) feeders, side-stuffer, vacuum, barrel cooling, various dies and other down-stream processing equipment. The equipment is currently being used to contact federal-

state- and private industry-sponsored research projects in wood/natural fiber plastic composites. Effort is under way to combine the two existing extrusion machines at the ECL to make co-extruded composites with enhanced structural and durability performance.

The Engineering Composite Laboratory has two primary missions: 1) to support continued advances in the science and technology of composite materials derived from natural resources; and 2) to promote transfer of the new development to industry and government organizations

in Louisiana, the nation and the world. The ECL is currently equipped with some state-of-the-art facility in raw material processing, nano material and composite manufacturing, nano/micro-scale particle size analysis, thermal, mechanical, and physical property testing. The ECL has a Web site at <http://www.nmr.lsu.edu/wu/HTMfiles/Qinglin%20Wu%20Engineering%20Composite%20Laboratory.htm>.

For more information, please contact Dr. Qinglin Wu at [wuqing@lsu.edu](mailto:wuqing@lsu.edu) or 225-578-8369.

## Workforce Training: LSU AgCenter and Louisiana Technical College Partner to Design Wood Products Manufacturing Curriculum

### Charles E. Clément, Extension Specialist

Louisiana's forestry sector is the second largest employer in the state, creating over 17,000 jobs, yet there is a shortage of labor to fill the positions necessary to support the 180 primary wood-using industries (sawmills, for example) and 750 secondary wood-using industries (such as cabinets or furniture).

In response to industries workforce needs, Charles Clément and Rich Vlosky of the Louisiana Forest Products development Center met with Mack Jackson III, Campus Administrator, and Stephanie Badeaux, Chief Workforce Development Officer at the Louisiana Technical College in Hammond to discuss developing a value-added wood products curriculum.

The Louisiana Forest Products Development Center, in cooperation with Kelsey Short of Louisiana Economic Development, have already completed market analysis showing the need for a trained workforce. We next need to demonstrate industry support for the proposed program. To do this, a survey indicating interest and need for a trained workforce will be mailed to all forest products companies within a 100 mile radius of the Hammond campus.

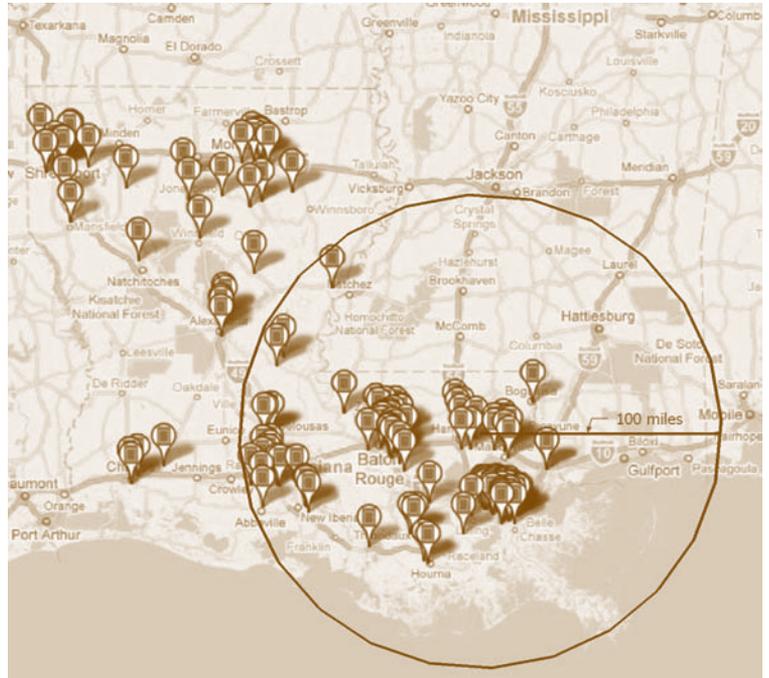
Companies were selected using the "Louisiana's Forest Products Industries" Web page ([www.lsuagcenter.com/forestryindustries\\_search](http://www.lsuagcenter.com/forestryindustries_search)) for both the primary industry (chipmills, lumber, pallet, plywood, pulp & paper, sawmills and treatment facilities) and the secondary industry (cabinets, crafts, flooring, furniture, millwork, windows and door manufacturers). The search was conducted using the per-parish option. The figure

on the right locates all the cabinet makers registered in Louisiana. The 100-mile radius encompasses a large portion of the states industry, and these companies should prove a receptive audience.

The following 29 parishes were determined to be within 100 miles of Hammond:

Washington, St. Tammany, Tangipahoa, St. Helena, Livingston, Orleans, St. Bernard, Plaquemines, Jefferson, St. John, St. Charles, Lafourche, St. James, Terrebonne, Assumption, St. Mary, West Feliciana, East Feliciana, West Baton Rouge, East Baton Rouge, Pointe Coupee, Iberville, Ascension, Lafayette, St. Landry, St. Martin, Iberia, Evangeline, Acadia and Vermilion.

The survey is designed to let companies reflect on their current situation (i.e. current number of employees, their age and how good they are at what they do) then proceeds to ask about training opportunities for existing employees and the need for additional trained personnel. The information from this survey is



useless unless industry is willing to invest into the creation of a curriculum. In this regard, there are questions asking participants if they would:

- Hire students graduating from the program and consider their certificate as work experience, which would result in a higher salary.

- Be willing to sign a pledge supporting a financial contribution (money or equipment), internships or a willingness to share their manufacturing expertise in terms of tours or workshops.

The survey has been reviewed by Louisiana Economic Development, Louisiana Technical College and the Louisiana Forest Products Development Center to make it concise and to-the-point to maximize response. The survey will be mailed in the spring, after seasonal distractions have abated.

Once responses have been tallied, the data and conclusions, along with the market demand and proposed program of study, will be presented to the Louisiana Technical College for review.

Louisiana Economic Development and the Louisiana Forest Products Development Center are very optimistic about the opportunity of raising the quality of workmanship in our forest products industry and creating needed jobs to help our economic development.

## Vlosky Receives Silver Awards for Excellence

Dr. Richard Vlosky, Director, Professor and Extension Specialist with the Louisiana Forest Products Development Center, School of Renewable Natural Resources and LSU AgCenter, received two Silver Awards for Excellence on February 6 from Southern Regional Extension Forestry. The first award is in the area of computer software and Web sites for his work on developing the Louisiana Forest Industries Web site: <http://www.lsuagcenter.com/forestindustries>.

The second award is in the area of journal publications for his article in the Journal of Extension titled "Web-based Communities as a Tool for Extension and Outreach." The article was co-authored by Dr. Sanna M. Kallioranta, Consultant with Pöyry Forest Industry Consulting in New York, and Scott Leavengood, Wood Products Extension Agent, Department of Wood Science & Engineering, Oregon State University.

# Have U.S. Value-added Wood Product Manufacturer Perceptions about Certification Changed in the Past 6 Years?

**Richard Vlosky, Director and Professor, LSU AgCenter**  
**Rado Gazo, Professor and Daniel Cassens, Professor, Purdue University, West Lafayette, Indiana**

## Introduction

Forty-seven percent of a select group of Wood & Wood Products readers responding to a recent survey said the green building movement will have a positive impact on the woodworking industry. Certification has been on an accelerated growth path for the past 10 years. Figure 1 shows a generalized structure of a certification program. There are two types of certification. The first is forest management where a third-party entity approves and certifies that forest management techniques adhere to the programs guidelines or rules. The second type of certification is chain-of-custody where certified material is tracked and monitored as it moves through the supply chain from the forest to the finished product for sale to consumers or other end customers such as builders.

## The Studies

In 2002 and 2008 we conducted studies to identify value-added wood industry perspectives and participation in certification and to see what has changed in the industry in the past six years. The 2008 study was Web-based and anonymous. We worked with associations to send survey link to members of five national associations: Association for Retail Environments (A.R.E.); Architectural Woodwork Institute (AWI); Business and Institutional Furniture Manufacturer Association (BIFMA); Kitchen Cabinet Manufacturers Association (KCMA); and the National Hardwood Flooring Association (NHFA). In addition, the link was published in Wood & Wood Products magazine. In 2002, we used paper-based surveys sent by associations to members (AWI, BIFMA, KCMA and the National Association of Store Fixture Manufacturers (NASFM)) to their members.

## Results

Over the past six years, the level of understanding about both forest and chain-of-custody certification has increased significantly for all respondents whether they sell certified products or not. As certification becomes more preva-

lent in wood product supply chains, all supply chain members need to be familiar with certification if they are to participate effectively.

## Certified Wood Product Sales

The percent of respondents that sell certified products increased 425% from 2002 (8% of respondents) to 2008 (42% of respondents). In addition to this increase, the average percent of company sales from certified products more than doubled from 10% in 2002 to 21% in 2008. The average dollar revenue attributed to certified wood product sales rose over 1,200% from \$720,000 in 2002 to \$9.4 Million in 2008. In 2002, 19% of respondents had chain-of-custody certification while in 2008, 36% of respondents did so.

There are many possible reasons why a company would enter the certification arena. For the value-added wood manufacturer respondents in this study, the business owner commitment to the environment ranked No. 1 in 2002 and 2008. Second ranked were to increase sales (2002) and take advantage of growing markets (2008). Ranked last for both studies was the goal of increasing profit/unit although this objective was more important in 2008.

Respondents sell their certified wood products through a variety of distribution channels and end users. With regard to distance from the company where certified products are sold, the percent that is going to export markets has increased from 1% in 2002 to 8% in 2008 indicating that U.S. respondents increasingly are able to compete in the global certified wood product marketplace.

## Is Anybody Making Money on Certification?

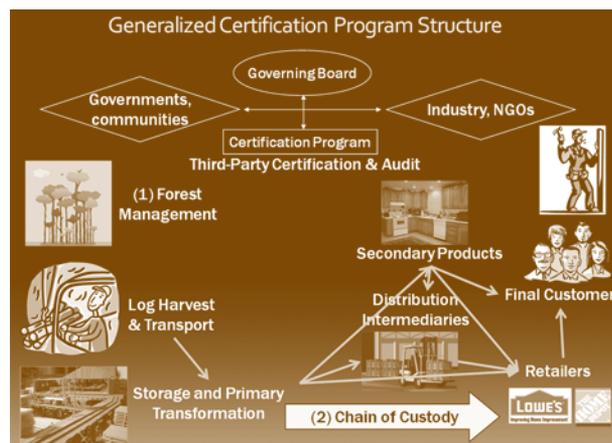
Costs are associated with becoming certified regardless of which program is used. The key, and often unanswered, question is, "Is anyone making a profit off of certification?" The straight answer is respondents are not sure or aren't telling. We were able to tease out some information that could be used to draw some infer-

ences about profitability. For example, the percent of respondents paying an upcharge or premium for certified raw materials to manufacture their products decreased from 86% of respondents in 2002 to 74% of respondents in 2008. On the other hand, the percent of respondents receiving a premium for the certified products they sell increased from 27% in 2002 to 61% in 2008. In addition, in 2002, 89% of respondents said they incurred additional costs (excluding raw materials) to provide certified products to their customers. This dropped to 77% of respondents in 2008.

## Conclusions

Results show that certification continues to be an important issue for the value-added wood products sector in the United States. Certification awareness and participation have increased significantly from 2002-2008. The percent of respondents receiving premiums for certified products has increased significantly from 2002-2008 and the percent of respondents incurring [non-raw material] costs for certified wood raw materials declined. The percent of respondents paying a premium for certified wood raw materials has also declined. Although these results may suggest profitability, the value and profitability propositions for certification remain elusive and inconsistent. At the end of the day, 97% of respondents in 2008 said that they will continue to sell certified wood products in the future.

Figure 1. Generalized Certification Program Structure



# University of West Hungary Awards Grozdits Honorary Doctorate

George Grozdits, working with Dr. Yuri Lvov's LbL Group (Layer-by-Layer Molecular Selfassembly) at the Institute for Micromanufacturing (IfM), was awarded Doctor Nonoris Causa (Honorary University Doctor) by the faculty senate of the University of Western Hungary.

Grozdits was connected and cooperated with the University of West Hungary (six campuses, about 20,000 students) on and off over the past 54 years, when he was at the College Forest Engineering Sopron, Hungary; at the University of British Columbia, Vancouver, British Columbia, Canada; at Virginia Tech and State University, Blacksburg, Virginia; in the Canadian National Forest Products Laboratory at Ottawa; with the Universidad Merida in Venezuela; and now at Louisiana Tech University, Ruston, Louisiana. He was also employed in a number of industrial settings and positions.

The flagship campus of the University of Western Hungary is in Sopron, Hungary, where the Forestry and Wood Engineering Campus is located. It has an impressive history, both societal and scientific accomplishments. The higher level of technical education in Hungary started in 1735, in Selmečbánya, which is now in Slovakia. The school was established to support the mining industry, namely to produce timber and surveyors for underground mining. Throughout the history of Europe, the Mining and Forest Engineering Academy was to remain in Hungarian Domains, which meant moving from the Slovakia (Selmečbánya) to Sopron, Hungary in 1919. At the time, the city of Sopron was under referendum, whether to belong to Austria or to Hungary, which was mandated by the Peace Treaty at the end of World War I. Due to the actual armed resistance of the newly arrived students the city of Sopron remained a Hungarian city.

"After the defeat of the revolution in 1956 (another student-armed rebellion), many teachers and students emigrated from Sopron, Hungary. A significant number settled in Vancouver, Canada, where they developed a Hungarian division of the forestry faculty at the University of British Columbia (others went to the United States, Germany, Switzerland and Austria). Grozdits graduated with a B.S. in forestry degree from there in 1959. That was his first degree.

He later obtained an M.S. and Ph.D. from Virginia Tech, Blacksburg, Virginia. Meanwhile in Hungary, the 1956 revolution paid off and the political system changed. The Hungarian Forest Engineering College reinstated their emigrants and granted them the Diploma of Forest Engineering. In addition to these educational endeavors, Grozdits is currently a doctoral candidate at Louisiana Tech University.

The University of West Hungary was created on Jan. 1, 2000 by joining centuries-old independent pedagogy, agricultural, forestry, geoinformatic and agricultural economic colleges. This university prides itself as a green university. Ironically, a Fulbright Team, studying the university systems of Hungary and Poland suggested the formation of regional higher educational entities. Grozdits' wife Judy Eames, D.Ed. was a member of this Fulbright Group in 1996.

Grozdits is a wood technologist/ligno-cellulose material scientist – involved in studying woody tissue formation, ultrastructure of the fabulous cellulosic fibers and surface properties affecting wood composite formation. His work in all of these areas ultimately culminated in the use of nano technology. Under the leadership of President Daniel D. Reneau, Louisiana Tech's BioEngineering/Nanotechnology area was created. Dr. Yuri Lvov's innovation and foresight to move LbL nanocoating into the cellulosic fiber

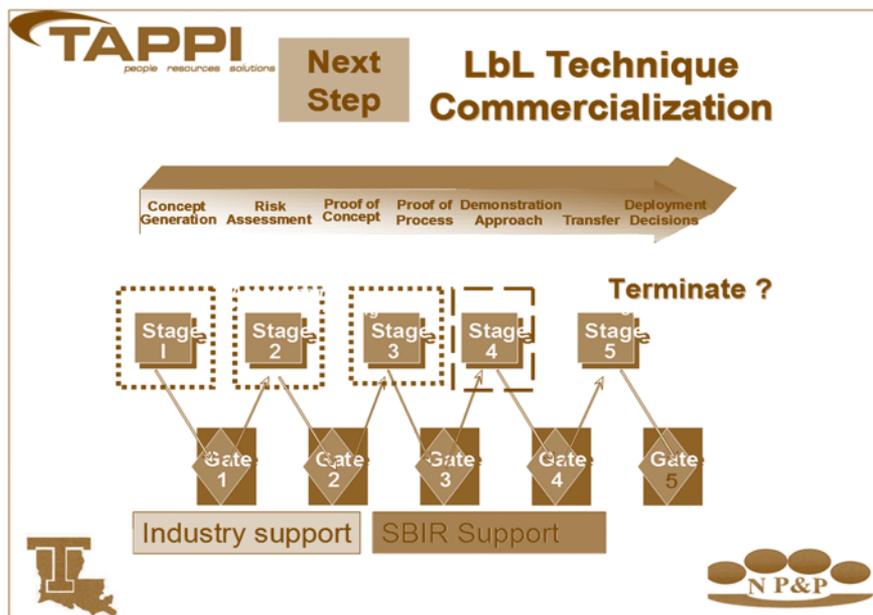
industry and Dr. Gibson's support from the School of Forestry helped Grozdits to receive the 37th Honorary Doctor Degree from a 273-year-old university.

Grozdits is a member of the Louisiana Tech Nano Pulp and Paper Initiative, which, in short, produces better paper with less mineral and chemical additives; improves paper recycling; provides large energy savings; and resource and environmental conservation. The layer-by-layer molecular-nanocoating of cellulosic paper fibers works in the realm of the nano-world at 10-9 m instead of the current micro-emulsion technology, which is in the realm of 10-6 m. Hence, layer-by-layer molecular nanotechnology uses substantially less material, while it achieves better and stronger paper properties.

The Louisiana Tech Nano Pulp and Paper project is at the pilot plant stage (Figure 1). We conducted one pilot plant trial in Sept. 2008 at the Empire State Pulp and Paper Research Foundation at SUNY Syracuse, New York. Project sponsorship is largely from SBIR grants and from area Louisiana paper mills. Special thanks to Smurfit-Stone Paper Mill at Hodge, Louisiana.

Grozdits would like to extend his appreciation to Drs. Reneau, Lvov, Gibson and Louisiana Tech for the opportunity to be able to work and create at Louisiana Tech within the framework of the LFPDC.

Figure 1. Development of the Louisiana Tech Nano Pulp and Paper Initiative/Concept. Steps toward commercialization.



# Wood Durability Lab Gains Certification for Additional Testing Standards

Louisiana companies that produce and market wood products now have an accredited testing facility available to them in the state.

The Wood Durability Lab (WDL) at the LSU AgCenter became an ISO 17025 Testing Laboratory through the International Accreditation Services (IAS) accreditation system on March 1, 2008. Additional test standards were added by IAS to the WDL approved scope of services on July 24, 2008. The lab essentially has been operating under ISO 17025 guidelines for over five years.

The test standards cover a broad range of important wood durability areas such as testing for termite, mold and fungi resistance to strength and even corrosion of nails in contacted with preservative-treated wood.

The Wood Durability Lab is now accredited by the International Accreditation Services to perform testing for ASTM D 143, D 1037, D 1413, D 1758 and D 3345. The approved American Wood Protection Association (AWPA) tests include E1, E7, E10, E11, E12, E16, E22, E23 and E24. The WDL is also certified to perform TM-1 and TM-2 of the Window and Door Manufacturers Association.

"We passed a number of test standards," said Shupe, a professor in the LSU AgCenter's Louisiana Forest Products Development Center in its School of Renewable Natural Resources.

"Developing effective management approaches for termites has been a major goal of the Department of Entomology and in the Forest Products Development Center," said Dr. David Boethel, vice chancellor of the LSU AgCenter.

The laboratory personnel include members from the faculty in the LSU AgCenter's Department of Entomology and School of Renewable Natural Resources.

"We promote team approaches to problem-solving in the LSU AgCenter," Boethel said. "We applaud those efforts and the efforts of our scientists to achieve ISO accreditation."

Manufacturers use the test results from independent ISO labs to verify the efficacy of their products and to meet requirements for building-code approval," Shupe said.

The LSU AgCenter has been providing testing for Louisiana wood products manufacturers for many years, but the results of those tests were not certified.

"This accreditation allows the AgCenter to provide a service to Louisiana manufacturers to help them design and market products that meet building codes," Shupe said.

The ISO accreditation process included a complete audit of the laboratory facility to assure testing meets rigorous standards, he added.

"Now, Louisiana companies can be certain their data are of the highest quality possible," Shupe said.

The accreditation followed a visit by inspectors who were shown how tests are conducted, how operators are trained and how record keeping and security are maintained.

"Chain of custody of materials and data are extremely important," Shupe said. "These things have to be handled in a precise manner to assure efficacy of the process and avoid miscommunication. The accreditation is subject to annual review, and inspectors look for constant improvement," Shupe said.

The LSU AgCenter researcher said the most important aspect of the accreditation process was developing a quality manual that "identifies who you are and how you operate."

Shupe said the LSU AgCenter's Wood Durability Laboratory has long been the leading facility in the country for testing for termite resistance in wood products.

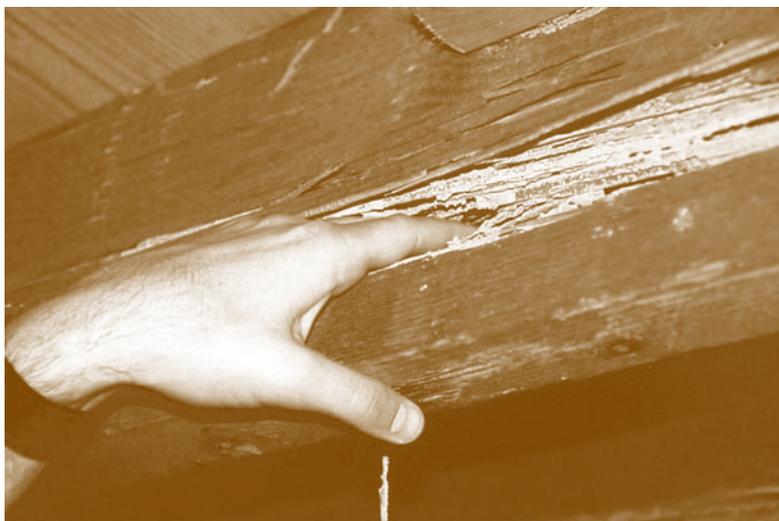
The basic test involves putting termites and wood in a jar of sand. After 28 days, researchers measure how much mass the wood lost, assign a visual rating and determine how many termites have died. The results indicate how effective a particular wood species or wood treatment is in repelling termites.

"No one in the country has run more of these tests than we have," Shupe said.

Shupe said the laboratory tests all sorts of wood products, including various species of solid wood as well as a variety of engineered wood products. In addition to termite resistance, the laboratory also tests wood for strength and for resistance to molds, fungus, corrosion and decay.

"We've had a lot of interest in mold testing," he said.

"This is a Louisiana lab that's doing something for Louisiana companies to find better products to fight termites," Shupe said.



*Wood durability testing is necessary to develop environmentally-friendly and cost effective preservatives for protecting residential houses and other wood-based products.*

## de Hoop Appointed Editor

Dr. Niels de Hoop has been appointed as technical editor of the International Journal of Forest Engineering. Currently in its 19th year of publication, this scientific journal publishes the results of studies in tree harvesting, processing and transportation; timber stand establishment, protection and tending; forest operations planning and control; machine design, management and evaluation; forest access, planning and construction; human factors engineering; and education and training.

## Sri Lankan Couple Receive Masters Degrees in Forest Products Marketing

At spring commencement 2008, a married couple, working under Dr. Richard Vlosky, received master's degrees in forest products marketing. Both are continuing in Ph.D. programs under Vlosky.

**Priyan Perera** attended the University of Sri Jayewardenepura, Sri Lanka, receiving the bachelor of science forestry and environmental science degree August 2004 with first class honors. In fall 2005 he enrolled at Louisiana State University to pursue a master's degree in forestry, concentrating on forest products marketing under Dr. Richard Vlosky. Priyan also joined the LSU Department of Environmental Science to pursue another master's degree in environmental sciences. Spring 2008, Priyan graduated with his M.S. in forestry and enrolled in the Ph.D. program in forestry. His dissertation research will look into modeling consumer behavior in ecotourism. After obtaining his Ph.D., Priyan plans to return to Sri Lanka and join academia.

His wife **Rangika Perera** studied at the University of Sri Jayewardenepura, Colombo, Sri Lanka, receiving her bachelor of science in forestry and environmental science degree May 2005 with first class honors. Fall 2006 she enrolled at Louisiana State University to pursue a master's degree in forestry, focused on forest products marketing under Dr. Richard Vlosky. For her master's thesis she researched an overview of the wood product import sector in the United States with an emphasis on opportunities for Sri Lankan exporters. Now she is in the Ph.D. program under the guidance of Vlosky. For her Ph.D. research she is interested in modeling the best practices of ecotourism for the market segment of ecotourists. In the future she plans to return to Sri Lanka and join academia.



*The Pereras in Academic Regalia*



**Diana Obanda** is a new postdoctoral scientist. She is working with Dr. Todd Shupe on the development of metal-free wood preservatives. Diana is from Kenya.

**Dr. Fei Yao** successfully defended and submitted his dissertation in November and received his Ph.D. degree December 2008. Congratulations, Dr. Yao! Fei will join Dr. Wu's group as a postdoctoral researcher to continue his research in thermoplastics composites reinforced with wood/natural fibers.

**Dr. Dagang Liu** from South-East Forestry University, Guangzhou, China and **Dr. Haiyun Liu**, who recently graduated from the Institute of Chemistry, Chinese Academy of Sciences, Beijing, China joined Dr. Wu's research group as visiting postdoctoral researchers to work on research projects in the field of nano material and polymer composites.



**Xinan Zhang** (LSU Graduate School Economic Development Fellow) is pursuing his Ph.D. under Dr. Todd Shupe. Zhang is from Changzhou, China. He is working on recycling of preservative-treated wood.

## Abraham Baffoe Receives Fellowship

Twenty-three fellowships were awarded at the 44th session of the International Tropical Timber Council in November 2008. The newest group of fellowship recipients represents 16 different countries. ITTO offers fellowships through the Freezailah Fellowship Fund to promote human resource development and to strengthen professional expertise in member countries in tropical forestry and related disciplines. The goal is to promote the sustainable management of tropical forests, the efficient use and processing of tropical timber and better economic information about the international trade in tropical timber.

One of this year's fellowship recipients is **Abraham Baffoe** (Ghana) in support of his masters research entitled "Implications of Forest Certification on Forest Management and Timber Export Trade in Ghana." His advisor is Dr. Richard Vlosky,



**Birm J. Kim** joined Dr. Wu's group as a Ph.D. student in the area of wood plastics composites with emphasis on functional fillers. BJ is from Seoul, South Korea.

**Anil Raj Kizhakkepurakkal**, working with Dr. Niels de Hoop, completed his master's degree in May. His thesis, "Opportunities and Problems Associated with Development of Wood Energy Biomass Production in Louisiana," analyzed some of the issues and barriers with the commerce of wood residues produced by Louisiana's forest products industry. He is continuing with Dr. de Hoop to pursue a Ph.D. in supply chain and transportation analysis of biomass in Louisiana.

## Charles E. Clément LSU AgCenter

### Publications

Xu, W., and C.E. Clément. 2008. Prevention of drying defects and drying degrade in hardwood lumber by pre-drying treatment. *Forest Prod. J.* 58(6):29-35.

Clément, Charles E. 2008. Tax Tips for Wood Products Manufacturers. LSU AgCenter Web site (CMS).

Clément, Charles E. 2008. Webinar: Managerial Assistance. LSU AgCenter Web site (CMS).

Clément, Charles E. 2008. Managerial styles – 21<sup>st</sup> century reality. *Forest Products Society 62<sup>nd</sup> International Convention*. St. Louis, MO.

Clément, Charles E., Richard Vlosky and Michael Dunn. 2008. Cypress Mulch Study Shows Demand and Trends for Major U.S. Demand Sectors. *School of Renewable Natural Resources. Louisiana State University Newsletter*. Summer 2008.

Clément, Charles E. 2008. Directory of portable sawmills. LSU AgCenter Web site (CMS).

### Presentations

Clément, Charles E. 2008. Things that come from Trees. Baton Rouge Center for Visual Performing Arts (Attendees: 150 4-to-12-year-old children).

Clément, Charles E. 2008. Leadership styles: Command-and-control vs. worker responsibility. *Forest Products Society 62<sup>nd</sup> International Convention* in St. Louis, MO (25 attendees)

## Niels de Hoop LSU AgCenter

### Publications

Geral, C.A., and C.F. de Hoop. 2008. Public Perceptions of Wildfire Risk and Controlled Burning in the Wildland/Urban Interface of the Louisiana Florida Parishes. *Proceedings of the 30th Council On Forest Engineering Conference*, Charleston, SC, June 22-25, 2008. W.D. Greene and C. Bolding, editors. *Council On Forest Engineering*, Corvallis, OR. [www.cofe.org](http://www.cofe.org). 3 pp.

de Hoop, C.F., and S.J. Chang. 2008. Revision of the Booklet Biomass Energy

Resources in Louisiana. J. Shelly, M. Puettmann, K. Skog and H. Han, ed., *Woody Biomass Utilization: Challenges and Opportunities*, P. 88. *Forest Products Society*, Madison, WI 53705-2295.

de Hoop, C.F., S.J. Chang, A.Hanumappa-Reddy and A. Kizhakkepurakkal. 2007. Developing biomass utilization in Louisiana, USA: educating policymakers, assessing supply and demand, and integrating with forest management. *Austro2007 Conference*, Institute of Forest Engineering, Vienna, Austria. 8pp.

de Hoop, C.F. 2007. A Voluntary Logging Accident Database after Seven Years Created by a Partnership of Loggers and Bureaucrats. *International Conference on Safety and Health in Forestry* held in Nancy, France. *United Nations ECE/FAO*. 8 pp. <http://www.safety-forestry-2007.net>

de Hoop, C.F. 2008. Log truck safety. *The Louisiana Logger* 13(3):9. *Louisiana Logging Council*, Alexandria, LA.

de Hoop, C.F. 2008. 2007 accidents: another year of the truck driver. *The Louisiana Logger* 13(2):13. *Louisiana Logging Council*, Alexandria, LA.

de Hoop, C.F. 2008. Personal protective equipment needs to be maintained. *The Louisiana Logger* 13(1):9. *Louisiana Logging Council*, Alexandria, LA.

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### Presentations

de Hoop, C.F., and A. Kizhakkepurakkal. 2008. An Interactive, Web-based Database of Biomass Supplies and Demand in Louisiana. *Biographies & Abstracts, Forest Products Society Annual Meeting* held in St. Louis, MO. Madison, WI.

de Hoop, C.F., D. Jordan, W. Hebert and H. Collie. "Analysis of 2007 Partnership Logging Accidents." *OSHA Regulations Workshop or Advance Logging Safety Workshop; Sustainable Forestry Initiatives (SFI)*. Presented: May 13, 2008, Alexandria, LA; October 9, 2008, DeRidder, LA; October 14, 2008, Ruston, LA; October 29, 2008, Alexandria, LA; November 12, 2008, Alexandria, LA.

de Hoop, C.F., J.C. Pine, B.D. Marx and A.J. Lefort.. "Logging Injuries in Louisiana: Nature, Trends and Costs: 1985-2007." *OSHA Regulations Workshop or Advanced Logging Safety Workshop; Sustainable Forestry Initiatives (SFI)*. Presented: May 13, 2008, Alexandria, LA; October 9, 2008, DeRidder, LA; October 14, 2008, Ruston, LA; October 29, 2008, Alexandria, LA; November 12, 2008, Alexandria, LA.

de Hoop, C.F. "Personal Protective Equipment in Logging." *Timber Harvesting and Transportation Safety workshop; Sustainable Forestry Initiatives (SFI)*. Presented: May 13, 2008, Alexandria, LA; November 12, 2008, Alexandria, LA.

de Hoop, C.F. "Personal Protective Equipment and Logging Safety Research." *Advanced Logging Safety workshop; Sustainable Forestry Initiatives (SFI)*. Presented: October 9, 2008, DeRidder, LA; October 14, 2008, Ruston, LA; October 29, 2008, Alexandria, LA.

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## Todd Shupe LSU AgCenter

### Publications

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Catallo, W.J., T.F. Shupe, and T.L. Eberhardt. 2008. Hydrothermal processing of biomass from invasive aquatic plants. *Biomass & Bioenergy*. 32(2):140-145.

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Pan, H., T.F. Shupe, and C.Y. Hse. 2008. Synthesis and cure kinetics of liquefied wood/phenol/formaldehyde (LWPF) resins. *Journal of Applied Polymer Science*. 108:1837-1844.

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Obanda, D.N., T.F. Shupe, and H.M. Barnes. 2008. Reducing leaching of boron-based wood preservatives – A review of research. *Bioresource Technology*. 99(15):7312-7322.

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Pan, H., T.F. Shupe, and C. Y. Hse. 2008. Physical and mechanical properties of bio-composites from wood particles and liquefied wood resin. In: J.R. Shelly, M.E. Puettmann, K.E. Skog, H.-S. Han (eds.). *Woody Biomass Utilization Challenges and Opportunities*. Forest Products Society. Madison, WI. ISBN-13: 978-1-892529-51-0. pp. 43-46 (refereed).

## Grants/Contracts

Wu, Q. and T.F. Shupe. 2007. Wood preservative treating. Albemarle Corp. \$10,000.

Shupe, T.F. and Q. Wu. 2007. Wood durability testing. Osmose. \$5,062.

Shupe, T.F. and Q. Wu. 2007. Wood durability testing. Ignite. \$5,000.

Shupe, T.F., Q. Wu, and D. Ring. 2007. Naturelock Industries, Inc.. Diversified Wood Crafts. \$2,000.

Shupe, T.F. 2007. Unrestricted gift. Southern Pressure Treaters Association. \$2,500.

Shupe, T.F. 2008. Development of highway guardrail blockouts from decommissioned chromated cooper arsenate (CCA)-treated wood. Louisiana Board of Regents pFund. \$10,000.

Catallo, W.J. and T.F. Shupe.. 2008. Bio-based petrochemicals: hydrothermal production of acetic acid and CO<sub>2</sub> from pest vegetation biomass. Louisiana Board of Regents pFund. \$10,000.

Pan, H., T.F. Shupe, and C.Y. Hse. 2008. Characterization of CCA metals in liquefied spent CCA-treated wood sludge by sequential extraction. Louisiana Board of Regents pFund. \$10,000.

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Shupe, T.F. and Q. Wu. 2008. Wood durability testing. Arch Wood Protection. \$13,750.

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Rutherford, D.A., T.F. Shupe, Q. Wu, R.P. Vlosky, and C.F. deHoop. 2008. Durable wood-based products/composites from recycled wood and plastic materials. USDA WUR. \$67,707.

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Piao, C., M. Blazier, and T.F. Shupe. 2008. Development of novel technologies to utilize small diameter timber for value-added laminated composites. Louisiana Board of Regents. \$127,500.

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Shupe, T.F. and Q. Wu. 2008. Wood durability testing. Flakeboard America, Ltd. \$500.

Shupe, T.F. 2008. Wood durability testing. American Borate Co. \$1,000.

Shupe, T.F. and Q. Wu. 2008. Moisture performance of insulated raised floor systems in southern Louisiana. USDA Forest Products Lab. \$30,250.

Shupe, T.F. and Q. Wu. 2008. Termite repellency testing. Lanxess Corp. \$15,750.

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Shupe, T.F. and Q. Wu. 2008. Wood durability testing. Preventive Technologies. \$7,875.

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Shupe, T.F. 2008. Closed loop recycling of preservative-treated wood. LSU Graduate School. Economic Development Fellowship Award. \$100,000

Shupe, T.F. and Q. Wu. 2008. Wood durability testing. Titan Wood. \$1,200.

## Richard Vlosky LSU AgCenter

### Publications

Aguilar, Francisco X. and Richard P. Vlosky. 2008. Forest Certification Descriptions as a Tool for Branding: An Exploratory Analysis of U.S. Homebuilders & Architects. *Forest Products Journal*. 58(3):26-33.

Glavonjic, Branko and Richard Vlosky. 2008. Timber Sale Systems in the Balkans. *Journal of Forestry*. 106(4):206-213.

Perera, Priyan, Richard P. Vlosky, Michael A. Dunn and Glenn Hughes. 2008. U.S. Home Center Retailer Attitudes, Perceptions and Behaviors Regarding Forest Certification. *Forest Products Journal*. 58(3):21-25.

Kallioranta, Sanna M. and Richard P. Vlosky. 2008. Inter-organizational Information and Communication Technology Adoption in the Business-to-Business Interface.

## Qinglin Wu LSU AgCenter

### Publications

- Liu, H., Q. Wu, G. Han, F. Yao, Y. Kojima, S. Suzuki. 2008. Compatibilizing and toughening bamboo flour-filled HDPE composites: mechanical properties and morphologies. *Composite Part A*. 39:1891-1900. (IF=1.66)
- Wu, Q., and P. Tian. 2008. Adsorption Of Cu<sup>2+</sup> Ions With Poly(N-Isopropylacrylamide-Co-Methacrylic Acid) Micro/Nanoparticles. *J. Applied Polymer Science* 109:3740-3746. (IF=1.3)
- Xu, X., F. Yao, Q. Wu, and D. Zhou. 2008. The influence of wax-sizing on dimension stability and mechanical properties of bagasse particleboard. *J. Industrial Crops and Products: In-Press*. (IF=1.19)
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- Lu, J. Z., X. Duan, Q. Wu, and K. Lian. 2008. Chelating efficiency and thermal, mechanical and decay resistance performance of Chitosan copper complex in wood-polymer composite. *Bioresource Technology* 99:5906-5914. (IF=3.10)
- S. Y. Lee, I. A. Kang, G. H. Doh, H. G. Yoon, B. D. Park, and Q. Wu. 2008. Thermal and mechanical properties of wood flour/talc filled polylactic acid (PLA) composites: effect of filler content and coupling treatment. *J. Thermoplastic Composite Material* 21:209-223.
- Tian, P., Q. Wu, and K. Lian. 2008. Preparation of temperature- and pH-sensitive, stimuli-responsive poly(N-isopropylacrylamide-co-methacrylic acid) nanoparticles. *J. Applied Polymer Science* 108: 2226-2232. (IF=1.3)
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Yao, F., Q. Wu, Y. Lei, W. Guo, and Y. Xu. 2008. Thermal decomposition kinetics of natural fibers: activation energy with dynamic thermogravimetric analysis. *Polymer Degradation and Stability* 93(1):90-98. (IF=2.07)

Cao, Q. V., and Q. Wu. 2008. Modeling diameter distributions of poly(N-isopropylacrylamide-co-methacrylic acid) nanoparticles. Presented at the 2008 Southern Mensurationists Conference. St. Augustine, FL. Oct. 26-29, 2008

Wu, Q., Y. Lei, and H. Liu. 2008. Commingled polymer blends as possible matrix for wood plastic composites. In *Proc. Second International Forum on Wood Plastic Composites*. October 9-12, 2008. Shenyang, China. p 153-167.

Han, G., Wu, Q., Y. Kojima, S. Suzuki, J. Deng, and T. S. Y. 2008. Bamboo-flour filled high density polyethylene composites: effect of coupling treatment and nanoclay. In *Proc. International Symposium on Wood Science and Technology*. September 27-29, 2008. Harbin, China. p 523-524.

Wu, Q., H. Liu, G. Han, F. Yao, Y. Kojima, and S. Suzuki. 2008. Compatibilizing and Toughening Bamboo Flour-Filled HDPE Composites: Mechanical Properties and Morphologies. In *Proc. International Symposium on Wood Science and Technology*. September 27-29, 2008. Harbin, China. p 513-514.

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### Grants

High performance biocomposites. LA BOR Governor Bio-Initiative. Wu Q. (with Chen, Y. and G. Henderson). 7/1/2008 to 6/30/2009. \$110,920.

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Smith, Mark and Richard P. Vlosky. 2008. Louisiana Forest Industry Supply Chain Mapping: Results and Conclusion. Louisiana Forest Products Development Center Working Paper #83. June 10.

Clément, Charles, Richard Vlosky and Michael Dunn. 2008. Cypress Mulch Study Shows Demand and Trends for Major U.S. Demand Sectors. School of Renewable Natural Resources. Louisiana State University Newsletter. Summer 2008.

Vlosky, Richard, Priyan Perera, Michael Dunn and Glenn Hughes. 2008. What do Louisiana Non-Industrial Private Forest Landowners Think about Certification? Louisiana Agriculture. LSU AgCenter. Baton Rouge, Louisiana. 51(1):32-34.

Vlosky, Richard P. and Francisco X. Aguilar. 2008. Spatial Analysis of Louisiana's Forest Products Manufacturing Clusters. Louisiana Agriculture. LSU AgCenter. Baton Rouge, Louisiana. 51(1):34-35.

Vlosky, Richard P. 2008. Forward to the UNECE/FAO Forest Products Markets Annual Review 2007-2008. Geneva Timber and Forest Study Paper 23, ECE/TIM/SP/23. Geneva, Switzerland. August 5.

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A Strategic Analysis of the U.S. Treated Wood Industry: 2007. \$17,000. Southern Forest Products Association

Web sites-Developer & Web master

Louisiana Forest Products Development Center Web site. [www.rnr.lsu.edu/lfpdc](http://www.rnr.lsu.edu/lfpdc)

Louisiana Forest Products Community Web site. [www.laforestproducts.org](http://www.laforestproducts.org)

Louisiana Forest Industries Web site. [www.lsuagcenter.com/forest\\_industries](http://www.lsuagcenter.com/forest_industries)

United Nations-UNECE-Team of Specialists on Forest Products Marketing and Markets-Current Issues Web site. [www.rnr.lsu.edu/lfpdc/unece](http://www.rnr.lsu.edu/lfpdc/unece)

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## Dr. Thomas L. Eberhardt Honored at Elvin T. Choong Memorial Lecture Series

Dr. Thomas L. Eberhardt, research scientist with the USDA Forest Service, Southern Research Station in Pineville, Louisiana, was recently honored as the third speaker in the Elvin T. Choong Memorial Lecture Series at the School of Renewable Natural Resources, Louisiana State University in Baton Rouge, Louisiana. Dr. Eberhardt presented a lecture on May 13 entitled "Southern Pine Bark Quality: Impact on the Living Tree and the Utilization of Available Biomass Resources." The presentation was well-received by the diverse audience due to its many applications to both forestry and forest products. For the past six years, Dr. Eberhardt has led a research program encompassing the chemistry of extractives and the relationships between wood chemistry, wood quality and forest health. His applied research involves the development of new applications and processing technologies for forest biomass utilization. According to Dr. Todd Shupe, coordinator of the lecture series, "Tom was selected as this year's honoree because his research program emphasizes the relationship between forest management and wood quality and forest health, which were very important to the late Dr. Choong. Also, Tom is an outstanding scientist and person, and I wanted our students in the School to be exposed to him both on a professional and personal level." Elvin Choong was a long-time professor of wood science at LSU and is for whom the lecture series is named. He was strongly dedicated to forest conservation, students and academics.



### LFPDC FACULTY & STAFF LSU

Rich Vlosky	Director and Forest Products Marketing
Niels de Hoop	Environmental and Safety
Qinglin Wu	Wood Processing
Todd Shupe	Material Properties

### LA Tech

Mark Gibson	Material Properties
George Grozdits	Research Associate

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