



## Director's Message

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

After a well-deserved winter break, the LFPDC hit the ground running in the new year. We continue to be involved in state, regional, national and international activities. The Center held its inaugural Advisory Board meeting in March. Board members are helping us to guide LFPDC short-term activities and long-term strategies. The Board was pleasantly surprised at the caliber of research being conducted and the productivity being generated by our five faculty members. Of course, we cannot take full credit for this. Often behind the scenes are our graduate students, post-doctoral researchers and research associates. In this issue, we'd like to introduce you to these folks. We are proud to have them on our team.

As I mentioned in the last newsletter, an important part of our outreach strategy is the collaborative partnership the LFPDC has forged with LSU AgCenter Community Economic Development (CED) team members who serve the citizens of Louisiana in urban and rural economic development. In this issue of our newsletter, Dora Ann Hatch, a CED team member who has been working

*(continued on page 3)*



## Chitosan-metal Complex Helps Protect Engineered Wood Products



*Chitosan-metal complex formulated at the LFPDC.*

Wood-based composites are used increasingly in both interior and exterior applications as building, automotive, packaging, and other materials. The exterior application of wood-based composites has led to increased exposure of the materials to wetting, and, consequently, to decay fungi and insects (primarily termites). Significant efforts have been made to improve biological resistance of wood-based composites using zinc borate and other chemicals.

At the LFPDC's composite group, chitosan-based metal complex (CMC) is being developed as a potential preservative for protecting wood composites. Chitosan is a nontoxic natural polymer. It is derived from chitin and has a polyamino-carbohydrate structure. Chitin is the second most abundant natural polymer in the world and mainly exists in crustacean shells. Chitosan can chelate with metal salts to form a polymer metal-chitosan complex.

The current work includes formulation of chitosan and copper/zinc complex and evaluation of their processing ability and effectiveness. The work completed so far with wood-polymer composite shows promising results. Wood-polymer composites treated with CMC had thermal decomposition and stability behavior similar to

*(continued on page 8)*

## Louisiana Launches Forest Sector Economic Development Web Site

Governor Kathleen Babineaux Blanco announced in February the launch of an innovative Web site designed to facilitate and promote forest-sector economic development in Louisiana. It is located at [www.laforestproducts.org](http://www.laforestproducts.org).

Announced during the Governor's Rural Development Conference, Governor Blanco stressed the benefits to small rural companies. Through this forest-sector Web site, rural companies will have the same exposure and market opportunities as larger or urban companies. For the first time, wood products buyers anywhere in the world can search online for Louisiana manufacturers that meet their purchase needs.

"Louisiana's forest industry is one of the most important manufacturing employers in the state," said Governor Blanco. "The economic value of the forest sector to Louisiana is over \$3.8 billion. This Web site helps wood products companies, whether in Louisiana or elsewhere, to find Louisiana suppliers of their raw materials. It will help Louisiana's forest products sector become more integrated, which will grow jobs and strengthen our industry base."

The Web site – titled *Louisiana Forest Products Community* and located at [www.laforestproducts.org](http://www.laforestproducts.org) – is the most sophisticated state-level forest

*(continued on page 3)*

# Input-Output Applications to Forest Product Sector Development

The forestry and forest products sectors are important contributors to the overall economy of Louisiana. While the industry has made efforts to educate policymakers and the general public on the importance of the forest sector, many powerful methods are available to measure the importance of as well as to highlight the interconnections between the forest sector and the rest of the overall economy.

## The Input-Output Method

One of the most popular methods used in the past two decades to measure economic impacts of the forest sector as well as other natural resource sectors has been input-output (I-O) modeling. The method is most widely used to publicize the economic importance of the forest sector on the larger economy. I-O models measure the level of output, income and value added generated from forestry and forest product sector activity as well as generate multipliers that measure the additional indirect or spin-off effects that result from linkages between sectors within a regional economy. Policymakers have used results from I-O analyses to analyze potential "what-if" scenarios including the impact of new businesses entrants as well as the consequences on the economy of a region of outsourcing jobs.

I-O analysis has proliferated beyond its origins in the academic setting and is now performed by many individuals in the private sector. The development of commercialized ready-made I-O models has reduced the cost of model construction as well as the time required to learn how to apply these models to policy scenarios. This evolution in model application has overshadowed the more detailed impact outputs that are available.

## Innovations in Input-Output Modeling

As the overall economy has become more increasingly dependent on trade to provide the diversity of goods and services within the economy, regions are relying more on local household spending in the economy to enhance regional multiplier effects. Enhanced I-O models known as Social Accounting Matrices (SAMs) allow for a more detailed understanding of links among the forest products sector and the different household sectors of the economy. The distributional analysis generated by SAMs helps evaluate the separate impacts that alternative forest product development scenarios have on households of alternative income ranges within the economy.

I-O analysis can also estimate the occupational demands for employees in a region from forest-related economic activities. Both direct demand for employees with alternative skill sets as well as indirect demand for employees with occupational skills in forest product support sectors can be estimated and compared against a region's occupational supply to help policymakers target workforce development investments. An extension of I-O analysis called structural path analysis (SPA) allows for evaluation of both backward and forward linkages along the forest product supply chain. SPA can identify the existence and strength of cluster activity occurring between interconnected firms in the forestry and forest products sectors. Such analyses allow policymakers to target potential input supply and forest product demand industries that can result in increased production and consumption of forestry-related products and services.

Additionally, I-O analysis can be used to measure the impact that the forest sector has on the natural resources base.

Environmental variables such as water pollution, soil erosion and air pollution can be incorporated into I-O models to estimate the changing levels of air and water quality both directly coupled with forest sector development as well as indirectly linked through pollution generated by forest product support sectors. Hence, I-O analysis provides the opportunity for a region to evaluate the potential benefits in jobs, value added and income of alternative forest product development strategies against the total direct and indirect environmental costs they may incur.

As forestry and forest product dependent regions adjust to changing market forces that affect the demand for forest products, communities must make strategic investment decisions with public and private resources. I-O analysis can help policymakers weigh alternative development strategies that have differing effects on businesses, households and government in a region.

For more information on applications of input-output analysis to economic and community development activities, contact Dr. J. Matthew Fannin, assistant professor of agricultural economics and agribusiness, at (225) 578-0346 or at [mfannin@agcenter.lsu.edu](mailto:mfannin@agcenter.lsu.edu). ■



J. Matthew Fannin

## Forest Product Activities at Louisiana Department of Agriculture and Forestry

Louisiana is blessed with natural resources and agricultural products grown or produced in every parish. From cucumbers to corn and pine straw to high quality antique furniture reproduction, Louisiana has it all.

The Louisiana Department of Agriculture and Forestry (LDAF), under the leadership of Commissioner Bob Odom and State Forester Paul Frey, is responsible for protecting, conserving and replenishing the state's forest resources, ensuring consumer protection and facilitating economic development.

LDAF is involved in legislative activities at state and national levels, timberland management, seedling production, resource assessment, administering the Forest Productivity Program, insect detection, forest fire detection, suppression and protection, law enforcement and investigation, severance tax reporting, quarterly stumpage value and annual production reporting, information and education programs, urban forestry development, product use, marketing and economic development activities.

Product development begins with healthy, productive forests. The department is in the position to grow millions of affordable, high-grade seedlings, ensuring a dependable source for future forests. Implementing the popular Forest Productivity Program has allowed timberland owners to enjoy attractive cost-share savings and plant thousands of acres in productive timber. Management, enforcement and educational programs,

(continued on page 3)

# Louisiana Launches

(continued from page 1)

sector Web site in the nation. A key component is the self-generating directory of Louisiana forest product companies. Any company fitting the product line criteria can input its company specifics to be included in the directory. Once in the directory, the listing is accessible worldwide to anyone searching for product descriptions.

Louisiana manufacturers can also use the site to search for raw materials suppliers and equipment to support their companies.

Louisiana Economic Development and the Louisiana Forest Products Development Center, part of the LSUAgCenter, developed the site with collaboration and input from key institutions in industry, government and academia, including the Louisiana Forestry Association, Louisiana Department of Agriculture and Forestry, Louisiana Furnishings Industry Association and Louisiana Tech School of Forestry. Instrumental in the design and development of the site were Dr. Richard P. Vlosky, professor and director, Louisiana Forest Products Development Center, School of Renewable Natural Resources, Louisiana State University Agricultural Center in Baton Rouge; and Kelsey Short, director of Agriculture, Forest and Food Cluster Development for Louisiana Economic Development. The site was built by Transformyx, a Baton Rouge company.

"This is a perfect example of cluster development," said Don J. Hutchinson, secretary, Louisiana Economic Development. "Forests cover 48 percent of Louisiana's land area and make up much of our rural regions. Supporting and providing growth opportunity for this core industry in Louisiana through collaboration among industry, academia

and government will help grow individual companies and the forest products industry as a whole. This site will allow small businesses to interact with other Louisiana companies, both big and small, and will encourage entrepreneurship."

"Forestry and forest products are significant to a predominantly rural state like Louisiana," said Dr. William B. Richardson, Chancellor, LSU Agricultural Center. "Forests cover approximately 13.8 million acres of Louisiana's land area, with 59 of Louisiana's 64 parishes capable of producing sufficient timber to support forest industry activities. Having one Web site that provides comprehensive information about Louisiana's forest industry and the individual companies invested in forestry will have significant impact on expanding the industry."

"A major component is the Request for Proposal tool," said Short. "Each industry sub-sector has the RFP tool that

facilitates targeted product buying and selling. This will be a key element for connecting businesses."

The site is divided into five industry sub-sectors: Primary Products, Secondary (Value-added) Products, Engineered Wood Products, Logging and Harvesting, and Equipment Manufacturers and Distributors. Companies should self-enroll in the sub-sector most representative of their products and services. The directory part of the Louisiana Forest Products Community will ultimately be the most comprehensive statewide company and product listing in the country.

More than 19,000 people are employed in forest manufacturing, with an estimated 5,000 employees harvesting and transporting timber. There are approximately 148,000 owners of Louisiana forestland.

For additional information contact Vlosky at [Vlosky@lsu.edu](mailto:Vlosky@lsu.edu). ■

## Director's Message

(continued from page 1)

very closely with the LFPDC, shares her thoughts and recent experiences in supporting forest sector development in Louisiana.

We'd also like to introduce you to one of our new colleagues, Dr. J. Matthew Fannin, an assistant professor in the Department of Agricultural Economics and Agribusiness. Matt is an expert in the field of input-output (I/O) analysis and contributed an article on I/O applications in the forest sector. We plan to work closely with Matt on joint research.

Equally important as on-the-ground economic development is the need to understand and contribute to crafting of policies that affect natural resources. Earlier this year, the Louisiana Board of Regents established the Center for Natural Resources Economics and Policy (CNREP), housed in the Department of Agricultural Economics and Agribusiness at LSU. In an article in this issue, Dr. Rex Caffey, director of CNREP, describes the Center and planned activities.

Since its inception in 1992, the LFPDC has had a strong and consistent relationship with the Louisiana Department of Agriculture and Forestry (LDAF). In this issue, Michael Buchart, director of Forest Products Marketing, gives us an overview of the activities and services provided by the LDAF.

For more information about the Louisiana Forest Products Development Center, please visit our Web site: <http://www.nnr.lsu.edu/lfpdc>. ■

## Forest Product Activities at LDAF

(continued from page 2)

along with many of Louisiana's forest community players, facilitate and guide positive development of our natural resources. Economic development efforts of the department are important to the state's combined effort to improve Louisiana's economy.

Whether developing a nature trail, managing timber for multiuse, nurturing concept creation, assisting local businesses with their marketing, expansion or retention needs, recruiting business prospects, or marketing Louisiana at international trade shows, LDAF has staff ready to take on the challenge.

Since the inception of the Louisiana Forest Products Development Center, LDAF has been available and continues

to be available to work with academia to improve Louisiana's forest community and those businesses dependent on forest resources. The lab has created a wonderful opportunity for wood-based industries to seek technical assistance for practical, profitable application. Our relationship with the lab continues to strengthen as we face the challenges of an ever-changing community. Contact Mike Buchart, director of Forest Product Marketing, Utilization and Development, LDAF, at [mike\\_b@ldaf.state.la.us](mailto:mike_b@ldaf.state.la.us); <http://www.ldaf.state.la.us>. ■



Mike Buchart



# LSU AgCenter Establishes Center

Louisiana lawmakers and others involved in public decision making will have another source of information to use in developing public policy as a result of a new research unit in the LSU AgCenter.

The Board of Regents and the LSU Board of Supervisors recently approved the establishment of the Center for



*Rex Caffey*

Natural Resource Economics and Policy at the LSU AgCenter. Dr. Rex Caffey, a wetlands and coastal resources economist in the LSU AgCenter's Department of

Agricultural Economics and Agribusiness, has been named director.

"The center will be beneficial to the state and the nation because it will bring natural resource economists from the LSU AgCenter, LSU and other agencies together," said Dr. Gail Cramer, head of the LSU AgCenter's Department of Agricultural Economics and Agribusiness. "They will provide policymakers with economic analyses that should be beneficial to make improved decisions about resource use in Louisiana."

Cramer said the group will be able to conduct economic analyses to provide information on the benefits and costs of resource activities – not only to private individuals but also to society. He said some areas of work could include decisions about water use, wetland valuation, farm programs and conserva-

tion programs. "These are issues that could and should be addressed," Cramer said.

Caffey said economists look at the allocation of scarce resources among competing user groups, as well as location and ownership issues, such as property rights and market and non-market valuations. He said a survey of more than 200 academic departments, centers and institutes in Louisiana colleges and universities showed none focus on policy, management and economics of natural resources.

Calling it a research cooperative and a center without walls, Caffey said the new center's purpose is to contribute to the efficient management and sustainability of Louisiana's natural resources by bringing together social science researchers from diverse program areas, including energy, coastal

## Northwest Regional Forest Sector Development in Action

At the request of Dr. Paul Coreil, LSU AgCenter vice chancellor and director of the Louisiana Cooperative Extension Service, a team composed of Dr. Rich Vlosky, director of the Louisiana Forestry Products Development Center; Kelsey Short, director of Agriculture, Forest and Food Technology Cluster Development, Louisiana Economic Development; and Dora Ann Hatch, LSU AgCenter Community Economic Development agent, created a collaborative team designed to enhance the Northwest Value-Added Wood Products Industry. This collaboration of 14 members is now known as the Northwest Value-Added Wood Products Initiative (NVAWPI) Team.

The goal of the team since its inception has been to develop a strategy to follow up on a 1998 study, "A Market Based Strategy for Rural Development in Northwest Louisiana," and put its recommendations into action. The study, conducted by Vlosky and others, revealed that a 10-parish area in Northwest Louisiana contained significant quantities of quality commercial softwood and hardwood timber sufficient to support the development of secondary forest products. The study also pointed out that such development of value-added forest products in the Northwest quadrant of the state would facilitate economic development in rural areas.

Following up on the recommendations of the study, LSU AgCenter's Community Economic Development Agents Dora Ann Hatch, Winzer Andrews and Cleve Weisgerber and their project leader, Dr. Deborah Tootle, facilitated a focus group meeting in July of 2003 with participants from value-added wood companies located in Claiborne, Webster and Bienville parishes. The participants were asked to list the barriers to the expansion of value-added wood product industry businesses in Northwest Louisiana. Participants identified these needs and issues: insufficient marketing to promote Louisiana

value-added wood products, lack of skilled labor available, lack of funds to purchase new equipment, insufficient time and money to upgrade with new technology, and lack of knowledge of existing economic development incentives available to businesses.

The NVAWPI Team responded in September of 2003 by hosting a forum addressing the issues. Team member Vlosky explained the LFPDC; Jack Siekkinen, executive director of the Louisiana Furniture Industry Association, made the group aware of opportunities to market their products; Diana Simek, vice president of Ark-La-Tex Regional Export & Technology Center Inc. and manager of Metro/Regional Business Incubator, explained HUD applications and business tax incentives; C.J. Smith and Brian Pasquier, both of Manufacturing Extension Partnership of Louisiana, explained grant opportunities for businesses impacted by imports; Dora Ann Hatch, LSU AgCenter agent, explained the Renewal Community Tax Incentive; and Winzer Andrews, LSU AgCenter agent, explained Louisiana Tech's new Delta E-Commerce Program that helps rural businesses develop Web sites.

Other team members include: Elizabeth Higgins, director of the Center for Rural Development at Louisiana Tech; Dr. Mark Gibson, professor and associate director of the School of Forestry, LFPDC, Louisiana Tech; and George Grozdits, research associate, LFPDC, Louisiana Tech. For more information, contact Dora Ann Hatch at dhatch@agcenter.lsu.edu or telephone (318) 927-9654.



*Dora Ann Hatch*

and inland wetlands, fisheries, forestry, wildlife, and soil and water.

“Louisiana is the best place for this sort of research,” Caffey said. “It’s the terminus of one of the world’s largest river systems – a region well-known for its natural productivity.”

Dr. Mike Dunn, an associate professor of natural resource economics in the LSU AgCenter, said the Center for Natural Resource Economics and Policy will provide a basis for dealing with the economic aspects of resource use and conservation in the areas of forests, wildlife and energy, as well as with all aspects of water.

“There’s no reason for the LSU AgCenter not to be the premier land-grant-based organization that deals with the economic and policy aspects of natural resources,” Dunn said.

Dr. Steve Henning, an associate professor of resources and rural development in the LSU AgCenter, said he

expects the new center to help people become more aware and to help them identify and prioritize future research and outreach needs.

“There’s an opportunity to get into the process early with data to help make decisions,” he said. “We have a role to contribute in the process to think about real costs and identify them.”

Henning said agricultural economists traditionally worked with farm management and production economics. Now most issues have elements of resource policy.

“We’re looking at farm management with emphasis on resource use and allocation,” he said, stressing that those activities readily translate to other resource issues. “When policymakers look at the coast and coastal issues, for example, most discussion focuses on physical and technical issues,” Henning said. “We can help them consider social-economic issues – the financial consider-

ations and the social impacts on people.”

Caffey said the Center for Natural Resource Economics and Policy already is planning a national conference. “Challenges of Socio-economic Research in Coastal Systems” is set for May 27-28 at the Lod Cook Conference Center in Baton Rouge.

In addition to Caffey, Dunn and Henning, other members of the center include Dr. Hamady Diop and Dr. Walter Keithly of the LSU Coastal Fisheries Institute; Dr. Jack Isaacs of the Louisiana Department of Wildlife and Fisheries; Dr. Richard Kazmierczak, Dr. Krishna Paudel and Dr. John Westra of the LSU AgCenter Department of Agricultural Economics and Agribusiness; Dr. William Olatubi of the Center for Energy Studies; and Dr. Richard Vlosky of the LSU AgCenter School of Renewable Natural Resources. For information, contact Rex Caffey at (225) 578-2393 or [rcaffey@agcenter.lsu.edu](mailto:rcaffey@agcenter.lsu.edu).

## "Meet" our Graduate Students, Research Associates, Post-docs, and Visiting Students and Professors

### Graduate Students

**Brian K. Via**, doctoral student working under Dr. Shupe, is working on using near infrared spectroscopy to model wood quality traits for a partial diallel of

longleaf pine. Brian is from Martinsville, Va., and worked for three years at International Paper in Bainbridge, Ga., where he led several wood quality

research programs including pulp yield, lumber recovery, genetics and product development. He received both his master’s in wood mechanics and his bachelor’s in forest products marketing at Virginia Polytechnic Institute and State University.



**Yaojian Liu** is working toward a master’s degree under Dr. Shupe in wood chemistry. Yaojian researches termiticidal compounds in naturally decay resistant trees, which include the analysis and comparison of the

antitermitic components from various resources, and mass production of the compounds with biological methods. He has a B.S. degree in bioengineering from the Department of Food Engineering in Shandong Institute of Light Industry in China. He also earned a master’s degree in biochemical engineering from South China University of Technology.



**Amith Hanumappa Reddy** is a graduate assistant working with Drs. de Hoop and Smith on a project concerning the use of brushy material and small trees that present a fire hazard in the woods. He is also working on a master of science degree in mechanical engineering. Amith hails from Banga-



lore, India, and graduated with a bachelor of engineering in mechanical engineering from the R.V. College of Engineering in Bangalore, India. He worked at the National Aerospace Laboratories in Bangalore, carrying out experiments in field of tribology. He also studied at South Dakota State University in Brookings before transferring to LSU.

**Hui Pan** is working with Dr. Shupe to earn her doctoral degree. She received her B.S and M.S in wood science and technology in Northeast Forestry University, China, in 1993 and 2002, respectively. Her research is on the synthesis of wood adhesive from liquefied wood.



**Xiaobo Li** got his B.S. degree in wood science from Beijing Forestry University in 1999. He continued his academics at the Chinese Academy of Forestry (CAF) from 1999 to 2002 and received a master of science degree in wood science from CAF in 2002. He

started a second M.S. degree under Dr. Shupe in April 2002 and is

nearing completion. His research focuses on the properties of bamboo fiber and its potential for producing fiberboard.



**Francisco X. Aguilar** is in the doctoral program in forest products marketing under Dr. Vlosky; he is minoring in agricultural economics. Francisco received his B.S. in agronomic engineering from E.A.R.T.H. University in Costa Rica and completed his M.S. in

sustainable rural development at the Royal Agricultural College (U.K.) as a scholar of the British Council. Experience includes

sustainable rural development work in Asia (Sri Lanka, Thailand), Costa Rica and Ecuador with both private and public institutions.



**Shadia Duery** is a master's degree student in forest products marketing with Dr. Vlosky. She was born in Bolivia.

Shadia has a B.S. in agriculture with a major in socioeconomic development and environmental sciences from Zamorano University in Honduras.

Shadia spent 14 months as an intern with the U.S. Forest Service in Washington State. She is also chief production officer of farm/forest plantations for Bolivian Forest Products S.R.L., a company based in Bolivia.



**Sangyeob Lee** is a doctoral student studying wood composites under Dr. Shupe. He is conducting research on the influence of surface wettability of renewable wood materials and wetting behavior on the composite properties. He

is also developing surface induced nucleation of semicrystalline polymers on the wood fiber surface from the material modifications. He received a B.S. degree in forest resources/products and an M.S. degree in forest resources/production, majoring in forest products at Yeungnam University, Kyongsan, Kyungbuk, Korea. He earned a second M.S. degree in forest products, majoring in forest products at University of Idaho, Moscow, Idaho.



**Carrie Castille Mendoza** is pursuing a doctorate in natural resources management with a minor in political science under Dr. Vlosky. Her focus area is environmental/natural resource policy analysis. She received an M.S. in environmental studies from LSU and a B.S. in engineering from University of Louisiana - Lafayette. She has been employed at the LSU AgCenter for four years, where she conducts environmental research and education. A Louisiana native, she is statewide coordinator of the Louisiana Master Farmer Program.



**Sanna Maria Kallioranta** received her bachelor of science degree in forest economics and marketing from the University of Helsinki, Finland, in May 2001. She earned a master of science from Louisiana State University as the first forest-industry sponsored ForestExpress eBusiness Fellow in 2003. Her master's work had a strong specialization on forest products marketing and eBusiness. A native of Finland, she is



pursuing her doctorate with Dr. Vlosky and is writing a dissertation on "Integrating eBusiness in Business Strategies and Value Chain in the Paper Industry." She has several internship experiences from the paper industry and eBusiness, both from Finland and United States.

**Diana Nasirumbi Okwara** is beginning a doctorate program in forest products with Dr. Smith. A native of Kenya, she earned a B.S. with honors and a master's in wood science, both from the Department of Wood Science & Technology at Moi University in Kenya. Her master of science research concerned leaching of CCA. She will be working in the area of wood durability, concentrating on fixation of wood-based treatments in wood. In Kenya she has been a research assistant in the Department of Wood Science and plans to join that faculty when she returns. Diana speaks English and Kiswahili fluently. She is married and has three children.

**Matthew Voitier** is a graduate assistant pursuing an M.S. in forest products under Dr. Smith. He plans to graduate this summer. His research is in wood durability, incorporating wood-based treatments to stabilize oriented strandboard and protect it from degradation by Formosan subterranean termites, mold and decay. A Louisiana native, he earned a B.S. in forest management at Mississippi State University in 2001 and worked in the transportation industry for a short time. He plans to seek employment in the wood products industry.



**Yiqiang Zhou** is a doctoral candidate under Dr. Wu. He holds a B.S. degree from Northeast Forestry University, Harbin, China and an M.S. degree in wood science from Beijing Forestry in Beijing, China. His research topic is preservative-treated strandboard bonded with





pMDI-bonded resin and wood composite structure modeling.

**Bing Zhang**, a doctoral candidate under Dr. Wu, holds a B.S. degree and an M.S. degree in engineering from Shanghai Jaotong University, Shanghai, China. His research topic is finite element modeling of wood strand composites and x-ray tomography analysis of wood composite structure.



**Fu Yu**, a doctoral candidate under Dr. Wu, holds a B.S. degree and an M.S. degree in forest products from Nanjing Forestry University, Nanjing, China. His research topic is wood-inorganic (ceramic-based) composite materials.



**Gi Young Jeong** is working on a master's degree under Dr. Wu. He holds a B.S. degree in wood science and engineering from Chonnam National University, Korea. His research topic is improvement of impact strength behavior of wood-polymer composite materials.



### Research Associates

**Jay Curole** is a research associate working with Dr. Smith and pursuing an M.S. in forest products. He is working on a number of studies testing the effectiveness of wood-based product treatments to resist Formosan subterranean termites. He completed his bachelor's degree in forestry at Louisiana State University and has been assisting with lab and field research on

the impact of forest insects, nutrient cycling and tree genotypes on tree growth. Jay also has experience in the oil industry and seafood industry. He is a true Cajun, born and raised in Galliano.



**Priscille Galceran** is a research associate working with Dr. Smith for the summer of 2004. She is from the Ecole Nationale Supérieure des Technologies et Industries du Bois (ENSTIB) (The National School of Wood Technology and Industry) in Epinal with the Henri Poincaré Université of Nancy 1, Nancy, France. She has a fifth year left to complete a wood engineering degree. Priscille will do her internship with the Louisiana Forest Products Development Center, working in the area of wood physics and wood durability. She received a two-year degree at the Technology University Institute of Physical Measures, which included a three-month training period in a microwave research laboratory.

**Emilie Ferchaud** is a research associate working with Dr. Smith for the summer of 2004. She is from the Ecole Nationale Supérieure des Technologies et Industries du Bois (ENSTIB) in Epinal, France with the Henri Poincaré Université of Nancy 1, Nancy, France. Emilie will do an internship with LFPDC in wood preservation. She will return to ENSTIB to do her fifth year of study to obtain an engineering degree in wood science.



### Post-docs

**Cheng Piao** earned his B.S. degree in wood science and technology from Northeast Forestry University in China in 1987. He received a master of science degree in wood composites from the same university in 1990. He earned a second master of science degree in forestry in 1998 and a Ph.D. in 2003 from Louisiana State University. He earned his third master of science degree

in computer science from Louisiana State University in 2003. Dr. Piao is a post-doctoral research scientist stationed at USDA Forest Service, Southern Research Station in Pineville, La., and working for Dr. Shupe. His projects include theoretical and finite element modeling of tapered wood laminated composite poles, enhancement of structural integrity and durability of laminated composite poles, and heat and mass transfer of wood composites during hot pressing and pine straw bio-composites.



**Chi So** is a post-doctoral researcher working with Dr. Shupe in near infrared spectroscopy and materials science. Dr. So earned a Ph.D. in polymer science and technology from the University of Manchester Institute of Science and Technology in the United Kingdom. He has a strong spectroscopic background and has published extensively in the field of spectroscopy. He is investigating novel methods of using near infrared spectra to model wood properties.



**Guangping Han**, a post-doctoral researcher working with Dr. Wu, Dr. Han holds a B.S. degree and an M.S. degree in forest products from Northeast Forestry University, Harbin, China, and a Ph.D. degree in wood science from Kyoto University, Japan. Her area of expertise is process engineering in wood and agricultural-fiber-based composite materials. She works on structural wood composites



using furnish from small-diameter trees and sugarcane rind at the LFPDC.

**Ziqiang Lu** is a post-doctoral researcher working with Dr. Wu. Dr. Lu has a B.S. degree and an M.S. degree in forest products from Nanjing Forestry University, Nanjing, China, and a Ph.D. degree in forestry from LSU. His area of expertise is wood polymer composite and wood protection. He is working on wood surface modification and interfacial analysis for wood-polymer composites.



**Ximing Wang**, head of the Department of Forest Engineering at Inner Mongolia Agricultural University in China and a post-doctoral research scientist of China Academy of Forestry (CAF), is a visiting wood scientist working with Dr. Shupe and Dr. Hse, principal wood scientist with the USDA Forest Service, Southern Research Station (SRS) in Pineville, La., on the development of advanced biomass composites from bamboo. His research is part of a three-year collaborative project aimed at value-added utilization of bamboo. Dr. Wang is researching engineered wood panel production from bamboo.



**Zhehui Liu** is a post-doctoral researcher working with Dr. Wu. Dr. Liu holds a B.Eng. degree and an M.Eng. degree from North China Institute of Technology, Shanxi, China, and a Ph.D. degree in polymer engineering from Chinese Academy of



Science, Beijing, China. His area of expertise includes polymer chemistry and physics and plastic/rubber engineering. He is working on wood polymer composite and polymer processing technology at the LFPDC.

### Visiting Students

**Jerome Bertois** will be a fifth-year student at the Ecole Supérieure du Bois (ESB) in Nantes, France. ESB is an engineering school specializing in wood science and technology and requiring five years of study. He will be working as a research associate with Dr. Smith in the area of wood physics and sawmill technology during the summer of 2004. He will return to France and finish his last year of study for his engineering degree.



**Julien Delforge** has experience in French forestry and is in the wood science and technology program at the Ecole Supérieure du Bois in Nantes, France. Julien will do a two-month training period as a research associate with Dr. Smith in wood preservation during the summer of 2004. He will return to France and finish his last year of study for his engineering degree.



Visit our Web site at:

[www.rnr.lsu.edu/lfpdc](http://www.rnr.lsu.edu/lfpdc)

### Visiting Professors

**Wenji Yu** is a visiting wood scientist from the Chinese Academy of Forestry (CAF) in Beijing, China. He works with Dr. Shupe and Dr. Hse of the USDA Forest Service, Southern Research Station (SRS) in Pineville, La., on the development of advanced biomass composites from bamboo. The CAF, SRS, and LFPDC are collaborating on a three-year project aimed at value-added utilization of bamboo. Dr. Yu is one of 12 scientists who will come to Louisiana and work on the development of bamboo fiber composites. ■



## Chitosan-metal Complex *(continued from page 1)*

untreated composites and composites containing zinc borate.

For CMC-treated composites, however, weight loss by brown rot fungus (*Gloeophyllum trabeum*) was less than 3 percent, compared with more than 10 percent weight loss for untreated controls. CMC performed similarly as

zinc borate on fungal decay resistance for wood-polymer composites. Work is ongoing with different formulations and different composite products.

For more information, contact Dr. Qinglin Wu, associate professor, at [wu@agcenter.lsu.edu](mailto:wu@agcenter.lsu.edu). ■



# Grading Workshop a Success

The 49th Annual Hardwood Log, Lumber and Tree Grading Workshop, held March 16-19 at the School of Forestry, Louisiana Tech University, hosted 28 participants from six states (Alabama - 2, Arkansas - 7, Georgia - 4, Louisiana - 6, Mississippi - 7, and Texas - 2). Registrants came from 12 different companies and agencies, representing large and small hardwood forest industry.

Cooperators included the LFPDC at Louisiana Tech, Anderson-Tully Company, Lincoln Timber Corporation Inc., Louisiana Department of Agriculture and Forestry - Office of Forestry, Louisiana Tech University - School of Forestry, and P. E. Barnes Lumber Co. In addition to supplying the logs for the workshop, Anderson-Tully provided its senior sawyer, Notton Jones, to operate the sawmill. Lincoln Timber Corporation Inc. provided a loader to unload the logs, and P. E. Barnes Lumber Co. provided several red oak boards for lumber grading practice.

Instructors were George Srepetis of George Doyle Inc., Pineville; and John Martel, Alexander State Forest, Woodworth. Both combined humor and experience to transfer a working knowledge of log, lumber and tree grades to the participants.

Next year's workshop, the 50<sup>th</sup>, will be in March 2005. Contact Mark Gibson, Workshop Coordinator, at LFPDC, School of Forestry, Louisiana Tech University, P.O. Box 10138, Ruston, LA 71272-0045 or call (318) 257-3392 to add your name to the mailing list. ■



## Recent Publications and Research Grants

### Qinglin Wu

#### Publications

- Lee, S., **Q. Wu**, and **W. R. Smith**. 2004. Formosan subterranean termite resistance of borate-modified strandboard manufactured from southern wood species: a laboratory trial. *Wood Fiber Sci.* 36(1):107-118.
- **Wu, Q.**, J.N. Lee, and G. Han. 2004. The influence of voids on the engineering constants of oriented strandboard: a finite element model. *Wood Fiber Sci.* 36(1):71-83.
- Lu, J.Z., **Q. Wu**, and I.I. Negulescu. 2004. Maleated wood fiber-high density polyethylene composites: compounding process. *Journal of Applied Polymer Science (In-Press)*.
- Lu, J.Z., **Q. Wu**, and I.I. Negulescu. 2004. Coupling efficiency of maleated polyethylene copolymers in wood-fiber-high density polyethylene composites. In *Proc. Annual Technical Conference, Society of Plastics Engineer*. Chicago, IL.
- **Wu, Q.** 2004. Borate-treated structural wood composites for durable home constructions. NSF Housing Research, Orlando, FL. February 13, 2004 (Presentation).

#### Research Grant

- **Wu, Q.**, and **R.P. Vlosky**. Wood Products Treatment Chemical Testing. Industry funding. \$5,000.

### Todd Shupe

#### Publications

- Catallo, W.J. and **T.F. Shupe**. 2003. Hydrothermal treatment of creosote-impregnated wood. *Wood and Fiber Science*. 35(3):524-531.
- Pugel, A.D., E.W. Price, C.Y. Hse, and **T.F. Shupe**. 2003. Composites from southern pine juvenile wood part 3: Juvenile and mature wood furnish mixtures. *Forest Products Journal*. 54(1):47-52.
- Via, B.K., **T.F. Shupe**, L.H. Groom, M. Stine, and C.L. So. 2004. Multivariate modeling of density, strength, and stiffness from near infrared spectra for mature, juvenile, and pith wood of longleaf pine (*Pinus palustris*). *Journal of Near Infrared Spectroscopy* 11(5):365-378.
- Freeman, M.H., **T.F. Shupe**, **R.P. Vlosky**, and H.M. Barnes. 2003. Past, present, and future of preservative-treated wood. *Forest Products Journal* 53(10):8-15. (Feature Article).
- **Shupe, T.F.** and C.Y. Hse. 2003. Delamination due to outdoor exposure of southern yellow pine plywood. In: (H.H. Lee and S.S. Jang, eds.). *Better Utilization of Wood for Human, Earth and Future*. International Conference on Forest Products. April 21-24, 2003. Daejeon, Korea. Vol. 1:332-338. (ISBN: 89-

87603-01-6-94540). The Korean Society of Wood Science and Technology. Seoul, Korea.

- Chow, P., G.L. Rolfe, and **T.F. Shupe**. 2003. Chemical constituents of juvenile paulownia, silver maple, and Eastern cottonwood species. In: (H.H. Lee and S.S. Jang, eds.). *Better Utilization of Wood for Human, Earth and Future*. International Conference on Forest Products. April 21-24, 2003. Daejeon, Korea. Vol. 1:588-592. (ISBN: 89-87603-01-6-94540). The Korean Society of Wood Science and Technology. Seoul, Korea.
- **Shupe, T.F.**, L.H. Groom, M. Stine, and B. Via. 2003. Genetic influences of longleaf pine wood properties assessed using near infrared spectra. *IAWA J.* 24(1):101.
- Hse, C.Y., **T.F. Shupe**, L. Lin, and C. Piao. 2003. A complete closed-loop CCA-treated wood recycling system. In: (A. Kenderes, ed.). *Managing the treated wood resource II*. 99<sup>th</sup> Annual Meeting American Wood Preservers' Association. Boston, MA. April 27-29, 2003. pp. 57-63.
- So, C.L., S. Lebow, L. Groom, and **T. Shupe**. 2003. Evaluation of the use of near infrared spectroscopy to identify preservative treated wood. In: (A. Kenderes, ed.). 99<sup>th</sup> Annual Meeting American Wood Preservers' Association. Boston, MA. April 27-29, 2003. pp. 39-47.

- **Shupe, T.F.**, and C.Y. Hse. 2003. Recycling of decommissioned CCA-treated wood into value-added engineered wood products. In: SWANA-Solid Waste Association of North America 3<sup>rd</sup> Annual Special Waste Conference. December 10-12, 2003. New Orleans, LA. pp. 73-78.

#### Research Grant

- Wood Rot and Decay Testing. Industry support. \$5,000.
- **Shupe, T.F.**, **W.R. Smith** and **R.P. Vlosky**. 2004. A Regional Educational Program to Increase Awareness of Pallet Phytosanitary Requirements for International Trade, Limestone Bluffs RC&D, Inc. \$15,000.

### Richard Vlosky

#### Publications

- **Vlosky, R.P.** and Timothy Smith. 2003. "eBusiness in the U.S. Hardwood Lumber Industry." *Forest Products Journal*. 53(5): 21-29.
- **Vlosky, R.P.**, Rado Gazo, and Daniel Cassens. 2003. "Certification Involvement by Selected United States Value-Added Solid Wood Products Sectors." *Wood and Fiber Science*. 35(4):560-569.
- Lohnde, S. and **R.P. Vlosky**. 2003. "An Overview of the Value-Added Wood Products Industry in South Carolina."

## Recent Publications and Research Grants

Forest Products Journal. 53(3):22-27

- Ozanne, L.K. and **R.P. Vlosky**. 2003. "Certification from the U.S. Consumer Perspective: A Comparison of 1995 and 2000." Forest Products Journal. 53(3):13-21

- Donkor, B.N., S.M. Kallioranta, **R.P. Vlosky** and **T.F. Shupe**. 2003. "A Regional Comparison of U.S. Consumer Perceptions about Treated Wood." Forestry Chronicle (Canada) 79(5):967-975

- **Vlosky, R.P.** and Y. Youn. 2003. "A cross-national study of internet adoption in the forest products industry in the United States and South Korea." In the proceedings IAWPS2003 of IAWPS (International Association of Wood Products Societies). April 21. Daejeon, South Korea.

- Bhandari, D., K. Paudel, M.A. Dunn, **R.P. Vlosky** and K. Guidry. 2003. "Economic Analyses of Homeowners' Attitudes Toward Formosan Subterranean Termite Control Programs in Louisiana." Proceedings of the American Agricultural Economics Association's annual meeting in 2003. March. Montreal, Canada.

- **Vlosky, R.P.** 2003. "SWST Member Services Survey Results." Invited Paper. Wood and Fiber Science. 35(3):478-480

### Research Grants

- Development of a Louisiana Web-Based Forest Sector Virtual Community and Directory, Louisiana Department of Economic Development, \$6,000, Co-Investigator: Kelsey Short

## Manufacturing Extension Partnership of Louisiana

Manufacturing plays a significant role in Louisiana's economy. More than 5,000 companies in Louisiana manufacture products. They employ more than 183,000 workers and contribute approximately 15 percent to the gross state product. Ninety-nine percent of Louisiana's manufacturers employ fewer than 500 people.

To survive in a competitive economy, small manufacturing firms must embrace new ideas, technology and processes. That's where the Manufacturing Extension Partnership of Louisiana (MEPoL) can help.

MEPoL is a not-for-profit organization that provides Louisiana's small and medium-sized manufacturers with business and technical solutions that help them become more productive and more competitive. We are part of the nationwide Manufacturing Extension Partnership (MEP) network established by the National Institute of Standards and Technology (NIST). Whether a manufacturing firm employs 15 workers or 500 workers, MEPoL has resources that can improve the firm's bottom line. MEPoL project directors and third-party consulting firms provide hands-on assistance to Louisiana manufacturers at reduced costs.

### MEPoL's Vision:

Our vision for the future is to be the premier center of the MEP network. We aspire to become the pre-eminent source that provides innovative business and technical solutions, creates significant impact and delivers outstanding customer satisfaction. We are driven to service the Louisiana manufacturing industry, produce shareholder value and fulfill our covenants with our stakeholders. Our commitment to continuous improvement as well as our partnerships with public, private and non-profit entities shall assist us in responding to the changing needs of Louisiana's manufacturers. We are dedicated to excellence, quality and multifaceted services that provide Louisiana's manufacturers with value-added performance results. We will be the catalysts in creating a new and better Louisiana.

For more information about MEPoL, contact: C.J. Smith, C.P.I.M., Director of Business Development, Manufacturing Extension Partnership of Louisiana (MEPoL), Metro-Regional Business Incubator, 7100 West Park Rd., Shreveport, LA 71129; Phone: (318) 671-6905 Fax: (318) 671-7628; [mepoldevelopment@bellsouth.net](mailto:mepoldevelopment@bellsouth.net); [www.mepol.org/](http://www.mepol.org/).

## News

### Todd Shupe

- Panel Member. USDA Small Business Innovation Research for Rural and Community Development Competitive Research Grants.
- Elected Chair, Education Committee. Louisiana Society of American Foresters.
- Technical Advisory Committee Member. USDA Forest Service. Wood Utilization Project. Pineville.
- Appointed to Society of Wood Science and Technology Critical Issues Committee- USDA NRICGP.
- Environmental and Regulatory Session Moderator. "Forestry: 2004 and Beyond" Forest Sector Summit and Issues Prioritization Forum. Hosted by the Louisiana Forestry Association. February 4, 2004. Alexandria.
- Appointed to LSU AgCenter Faculty Council. 2004-2006, Executive Committee.

### Richard Vlosky

- Value-added Products Session Moderator. "Forestry: 2004 and Beyond" Forest Sector Summit and Issues Prioritization Forum. Hosted by the Louisiana Forestry Association. February 4, 2004. Alexandria.
- Appointed to LSU AgCenter Diversity Council.
- Appointed member of the Center for Natural Resources Economics and Policy, LSU Agricultural Center.
- 2004 LSU AgCenter Diversity in the Workplace Award.





Louisiana Forest Products Development Center  
Renewable Natural Resources Building  
Louisiana State University  
Baton Rouge, LA 70803-6202

**Non-profit Org.**  
U.S. Postage  
**PAID**  
Permit No.733  
Baton Rouge, LA



**LFPDC FACULTY & STAFF**  
**LSU**

Rich Vlosky - Director  
and Forest Products Marketing  
W. Ramsay Smith - Wood Durability Issues  
Niels de Hoop - Environmental and Safety  
Qinglin Wu - Wood Processing  
Todd Shupe - Material Properties  
Pat Lefeaux - Administrative Assistant  
**LA Tech**  
Mark Gibson - Material Properties  
George Grozdits - Research Associate

**Louisiana State University Agricultural Center**  
William B. Richardson, Chancellor  
**Louisiana Agricultural Experiment Station**  
David J. Boethel, Vice Chancellor and Director  
**Louisiana Cooperative Extension Service**  
Paul D. Coreil, Vice Chancellor and Director  
**School of Renewable Natural Resources**  
Bob Blackmon, Director  
**Louisiana Forest Products Development Center**  
Richard Vlosky, Director  
Renewable Natural Resources Building  
Baton Rouge, LA 70803-6202  
Tel (225) 578-4155 Fax (225) 578-4251  
[www.rnr.lsu.edu/lfpdc](http://www.rnr.lsu.edu/lfpdc)  
The LSU AgCenter provides equal opportunities in  
programs and employment.

Visit our Web site at: [www.rnr.lsu.edu/lfpdc](http://www.rnr.lsu.edu/lfpdc)