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# INSIDE VT WOOD

## Reminder...

Remember to submit department news items by Friday 3 p.m. of each week to Will Pfeil at [wpfeil@vt.edu](mailto:wpfeil@vt.edu) for inclusion in Inside VT WOOD each Monday morning. All past issues of Inside VT Wood reside on our department website under the [publications link](#).

## News From Paul Winistorfer

- Congratulations to Debbie Garnand who was nominated for the President's Award of Excellence. A reception was held last week to honor nominees and recipients. Congratulations Debbie and thank you for all you do for our department!
- There will be no seminar this week due to Spring Break.

Upcoming Seminar Presentations (Wednesdays at 1pm Brooks Classroom):

MAR

### Llyn Sharp – VT STEM

25

VT-STEM K-12, or Virginia Tech's Science Technology Engineering and Mathematics K-12 Outreach Initiative, is an interdisciplinary group of people and programs that share research and resources among the university community, K-12 education, and other partners to contribute to Virginia's leadership in K-12 science, technology, engineering, and mathematics education.

VT-STEM K-12 programs and opportunities are aimed at diverse K-12 student, teacher, and university audiences, including classroom resources, teacher professional development, outreach consulting, education scholarship and K-12 formal and informal outreach.

APR

### Sam Conn – Director of Institute for Distance and Distributed Learning

1

Come hear about Wood Science's new initiative in distance learning course development!

- In the last quarter of 2008 through the end of February 2009, department faculty have submitted over 40 proposals for total funding request in excess of \$4 million! Our research portfolio in the department is diverse and aggressive. Faculty efforts to secure support for their work and to support graduate students is a real strength and quality indicator of our program. Proposal titles are shown below. Thanks to the faculty for their continuing hard work in the discovery arena.

- 📄 Pallet/Unit Load General
- 📄 Pallet/Unit Load
- 📄 Lean Leadership and Lean Transformation in a Global Environment
- 📄 Various
- 📄 Performance evaluation of D-scan packaging during distribution testing

- ☰ Durability evaluation using vt fastrack test protocol
- ☰ Marketing Study For Christmas Tree Growers Business Based On Customer Perceptions In The Commonwealth Of Virginia
- ☰ Identification Of Critical Success Factors For Christmas Tree Growers In Virginia
- ☰ Evaluation Of New Beverage Plastic Slipsheet For Costco
- ☰ Evaluation Of Various Unit Load For Suitability Is Distribution
- ☰ Annual Evaluation Of The Pm80 Tobacco Storage Box
- ☰ Performance Comparison Of Tempur-Pedic Mattress Constructions
- ☰ Nitrocellulose Characterization
- ☰ Chitosan-Cellulose Ionic Complex for Oral Drug Delivery
- ☰ Reduction of sanding needs in secondary wood processing operations
- ☰ Understanding the research and development (R&D) model from conception to commercialization: developing a new holistic R&D model and its application to the wood product industry
- ☰ Wood conservation support in technical and non technical work
- ☰ Pallet/Unit Load General
- ☰ Wood Conservation Support in Technical and Non-Technical Work
- ☰ Pallet/Unit Load General
- ☰ Wood Biomass Recover at Landfills in The Eastern United States: Status and Business Opportunities
- ☰ Impact of Increasing Energy Costs on the Hardwood Lumber Manufacturing Industry
- ☰ Relationship of Mineral Stain in Red Oak to Growth Site Variables
- ☰ Business Simulation Game for the Wood Products Industry
- ☰ Wood Products Manufacturing Collaborative and Interoperating Platform (CIP) Based on Open Source Information Technologies (IT)
- ☰ Online Distance Learning (Odl) Certificate Program on Utilization of Woody Biomass for Energy and Raw Materials
- ☰ Improving The Hardwood Industry's Rough-Mill Simulation Capabilities
- ☰ Lean Transformation in U. S. Hardwood Industries: Influence of Leadership on Success of Lean Transformation Outcomes
- ☰ Industry Engagement-Assessing Industry Needs and Impact Through Use of a Social Network
- ☰ Practical and Energy Efficient Solutions to Moisture Related Problems that result from Green Hardwood Pallets
- ☰ Avoiding Blotching when Finishing Hardwood Components Increases Processing Efficiency and Visual Appeal of Eastern Hardwoods
- ☰ Consumer Behavior and Perceptions Towards Wooden Household Furniture
- ☰ Value-Added Hardwood Products Costing Analysis and System
- ☰ Comparison of Green Building Systems
- ☰ Market Opportunities for Virginia's Wood Products in Central America

- ☰ Chemical Manipulation of Interactions between Macromolecules, Small Molecules, and Membranes
- ☰ Pallet/Unit Load General
- ☰ Collaborative Research: Microfluidic Device for Directed Assembly of Nanoparticles and Polyelectrolytes on In Situ Generated Templates
- ☰ Testing of Fiber Reinforced Beams

• Thanks to Ralph Rupert and his staff for assisting students from the Art Department who are entering a corrugated design competition. We will be hosting a reception for these students and their work in late March – watch for announcements.



### **Glasser helps with the Wallenberg Wood Science Center in Stockholm, Sweden**

Wolfgang G. Glasser, Professor emeritus of Wood Science, is presently spending two weeks with the newly created **WALLENBERG WOOD SCIENCE CENTER (WWSC)** at the Royal Institute of Technology (KTH) in Stockholm, Sweden. He is presenting seminars on “lignin-based materials” and “cellulose derivatives and regenerates”, and he is helping with formulating a program of center activities. The WWSC has been in operation since the beginning of 2009. Glasser had spent a 1-month guest professorship at KTH last October (2008). The WWSC is shared between KTH and Chalmers University of Technology in Gothenburg, Sweden. Both institutions have a long history of wood utilization research and are responsible, in part, for the worldwide success of Swedish forest products and Swedish wood utilization technologies.

Glasser currently also serves on the advisory board of the **FOREST BIOPRODUCTS RESEARCH INITIATIVE (FBRI)** of the University of Maine.

## Glasser Addresses German Ministry in Berlin

Wolfgang Glasser, Professor emeritus of Wood Science, is in Berlin, Germany, to present a plenary lecture on developments in the field of lignin utilization at a conference organized by the German Federal Ministry of Food, Agriculture and Consumer Protection. The ministry's AGENCY FOR RENEWABLE RESOURCES (Fachagentur fuer Nachhaltende Rohstoffe, FNR) was founded in 1993 for the purpose of supporting research and development in the area of renewable resources. In addition, the FNR informs the public about current research results, gives advice on a range of applications of renewable resources and organizes and takes part in scientific events. The FNR has invited Glasser to address German researchers and representatives of the German chemical industry at a conference at which opportunities associated with lignin isolated from a variety of biorefinery technologies are to be highlighted.

## STUDENTS: Early Information on Course Changes for Fall 2009

UNDERGRADUATE STUDENTS NOTE THE FOLLOWING PLANNED CHANGES IN OUR COURSES AND CURRICULUM FOR FALL SEMESTER 2009. Watch for further information prior to registration regarding established times for these course changes in our curriculum. Plan to see your advisor as needed for help and clarification.

### Undergraduate Students

#### Options will be Merged:

- Forest Products Marketing and Management and Manufacturing Systems will be merged into a single new option named Forest Products Business

#### Courses will be Merged:

- Mechanics I & II (WOOD 3315/3316) will be merged into a new single course. For fall this new course will come under the heading of WOOD 4984 Wood Mechanics Special Study (4 credits) – **Mechanics will not be taught fall semester 2009; it will be taught spring semester 2010.**
- Composites I&II (WOOD 4445 and 4446) will be merged into a new single course. For fall this new course will come under the heading of WOOD 4984 Wood Composites Special Study (4 credits)
- Wood Products Operations Management and Forest Products Business Management (WOOD 4624/4634) will be merged into a new single course. For this fall the new course will come under the heading of WOOD 4984 Forest Products Business Systems Special Study (3 credits)
- Lumber Manufacturing & Drying and Secondary Wood Products Manufacturing will be merged into a new single course. For fall this new course will come under the heading of WOOD 4894 Wood Products Manufacturing Special Study (3 credits)

#### Usual Occurring Fall Semester Courses that Will Not Be Taught Fall Semester 2009

- **Wood Mechanics (WOOD 3315/3316 merged course)**
- **Computer Application Systems in Forest Products (WOOD 4154)**

#### New Courses to be Offered

- WOOD 4984 Wood Enterprise Institute Special Study will be moved into the option checksheet as a requirement for the new Forest Products Business option and is a two semester sequence. For fall this new course will come under the heading of WOOD 4985 Wood Enterprise Institute Special Study (3 credits)
- WOOD 4984 Green Building Systems Special Study is a new course that is planned to be added into the Wood Structures and Materials option. This option will also soon be renamed. For fall this new course will come under the heading of WOOD 4984 Green Building Systems Special Study (3 credits)

## Graduate Students

- WOOD 5984 Special Study: Fundamentals of Wood Material Science will be offered this fall semester, 2009. A course proposal to establish this course as Wood 5124 Fundamentals of Wood Material Science has been submitted to the College Student Policy and Affairs Committee but because there is not sufficient time to get approval prior to the fall semester, we will again teach this as a special study.

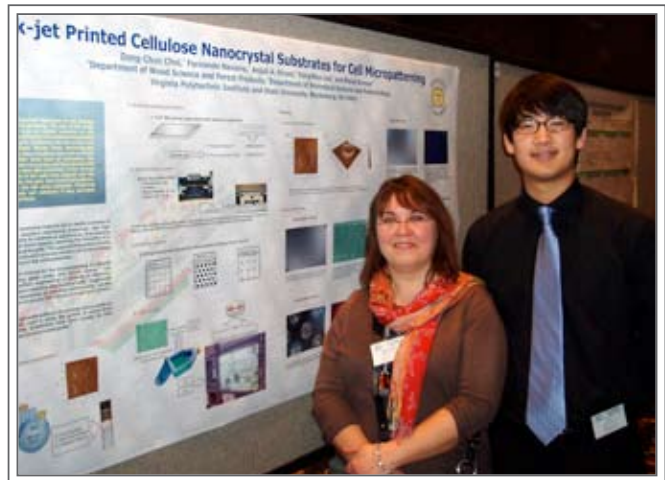
This course is considered the foundation course in wood material science that establishes the base for subsequent in-depth graduate courses in wood science. It is required for all incoming graduate students and it will be offered annually in the fall semester. The lecture component is Tues & Thurs 9:30 - 10:45 a.m. and laboratory sessions are Monday 1:30 - 3:30 a.m. The course is 4 credits.

Content includes wood anatomy and formation, wood polymer science, and mechanical and physical properties of wood and wood-based composites.

For more information, contact Dr. Zink-Sharp.

## Undergraduate Researcher Wins Poster Award

Dong-Chun (DC) Choi, a biology junior who is doing research under the supervision of Dr. Maren Roman in the Department of Wood Science and Forest Products, presented the results of his research at the 32nd Annual Meeting of The Adhesion Society in Savannah, Georgia last month. For his poster, entitled Ink-Jet Printed Cellulose Nanocrystal Substrates for Cell Micropatterning and which he had designed with the help of Fernando Navarro, a graduate student in Dr. Roman's lab, DC received the Best Poster Award Runner-Up. His poster was one of 27 posters presented during the poster session. DC is looking forward to presenting his poster at the 237th National Meeting of the American Chemical Society in Salt Lake City, Utah in two weeks.



## I-joists Damaged

Everyone is reminded that the I-joists in the Wood Engineering Laboratory are NOT TO BE WALKED ON OR DAMAGED. Several of the long I-joists which were to be used for testing have been damaged. It is important to be respectful of the property and research materials of others.

## Pallet Re-Use and Recycling Workshops Offered in Four Virginia Locations

Virginia Cooperative Extension, the Department of Wood Science and Forest Products, College of Natural Resources at Virginia Tech, the Sloan Foundation Forest Industry Center at Virginia Tech, and the USDA Forest Service will conduct a series of workshops on "Pallet Re-use and Recycling" in four locations in Virginia between March and May 2009.

Pallets literally move the world and an estimated 2 billion pallets are in use in the U.S. every day. However, pallets have a short life span and thus create significant costs to companies through purchasing and disposal costs and the operational resources allocated to manage them. Pallets also are responsible for two to three percent of all waste landfilled in the United States. This is despite the fact that technologies and markets exist that allow pallets to be re-used, repaired, recycled, converted into other products or turned into mulch, boiler fuels or alcohols (ethanol).

This workshop series, sponsored by Virginia Cooperative Extension, Virginia Tech's Department of Wood Science and Forest Products in the College of Natural Resources, the Sloan Foundation Forest Industry Center at Virginia Tech,



and the USDA Forest Service, will be held in four locations throughout Virginia between March 26 and May 5, 2009. The first event is planned for March 26, 2009 in the Central District of Virginia, followed by the workshop held in the East District of Virginia on April 9, 2009, Southwest District on April 30, and Northwest District on May 5, 2009. It will introduce industrial pallet users, pallet producers and recyclers, landfill operators, woodworkers, and entrepreneurs to the world of pallet recovery, repair, reuse, and recycling. Using

examples from industry, pallet procurement and maintenance cost reductions, innovative applications for used pallets, recycling opportunities and ways to run a profitable pallet business will be discussed. The workshop also will create opportunities to network with peers, suppliers and buyers.

For more information on the Pallet Recycling workshop series, visit <http://www.woodscience.vt.edu/palletrecycling/> or contact Urs Buehlmann, Virginia Cooperative Extension and Department of Wood Science and Forest Products at (540) 231-9759, [ubuehlm@vt.edu](mailto:ubuehlm@vt.edu).

## **Lean Thinking Workshops Offered in Four Virginia Locations**

Virginia Cooperative Extension, the Department of Wood Science and Forest Products in the College of Natural Resources at Virginia Tech and the Sloan Foundation Forest Industry Center at Virginia Tech will conduct a series of workshops on “Lean Thinking” in four locations in Virginia between March and May 2009.

Lean thinking is simply defined as a method of doing more with less in any business function. World-class companies have achieved significant cost savings, quality improvements, lead-time reductions, and profitability increases by employing lean thinking throughout their organization. Lean thinking offers benefits for any kind and size of business, administration, and non-profit organization.

This workshop, sponsored by Virginia Cooperative Extension in conjunction with the Department of Wood Science and Forest Products, College of Natural Resources and the Sloan Foundation Forest Industry Center at Virginia Tech will be held in four locations throughout Virginia between March 24 and May 14, 2009. The first event is planned for March 24, 2009 in the Northwest District of Virginia, followed by the workshop held in the Southwest District of Virginia on April 2, 2009, East District on May 7, 2009, and Central District on May 14, 2009. The workshop will introduce business owners, managers, administrators, supervisors, and entrepreneurs to the principles and benefits of lean thinking. Using hands-on simulation, participants will experience the improvements possible through using “common sense” when organizing, scheduling, and operating business functions. Participants will also gain a basic understanding of lean thinking and will be guided to the next steps in assessing opportunities for businesses in implementing lean principles into their operations.

For more information on the Lean Thinking workshop series, visit <http://www.woodscience.vt.edu/leanthinking/> or contact Urs Buehlmann, Virginia Cooperative Extension and Department of Wood Science and Forest Products at (540) 231-9759, [ubuehlm@vt.edu](mailto:ubuehlm@vt.edu).

## Recent Scholarly Activity by Department Faculty

From the Department Intranet Database

### Refereed Journal Publications

- Buehlmann, Urs, Matthew Bumgardner, and Tom Fluharty. 2009. Ban on landfilling of wooden pallets in North Carolina: An assessment of recycling and industry capacity. *Journal of Cleaner Production* 17(2009):271-275.
- Jeong, G.Y., A. Zink-Sharp, and D.P. Hindman. 2009. Tensile properties of earlywood and latewood from loblolly pine using digital image correlation. *Wood and Fiber Science* 41(1):51-63.
- Johnson, R.K., A. Zink-Sharp, S.Renneckar, and W.G. Glasser. 2009. A new bio-based nanocomposite: Fibrillated TEMPO-oxidized celluloses in hydroxypropylcellulose matrix. *Cellulose* 16(2):227-238.
- Buehlmann, Urs and Xiaoqiu Zuo. 2008. Investigating the influence of lumber sample subsets on simulated rough mill part yields. *Forest Products Journal* 58(10):84-90.
- Buehlmann, Urs, D. Earl Kline, Janice K. Wiedenbeck, and Robert Noble, Jr. 2008. The influence of cutting bill requirements on lumber yield using a fractional factorial design - Part I: Linearity and least squares. *Wood and Fiber Science* 40(4):599-609.
- Buehlmann, Urs, D. Earl Kline, Janice K. Wiedenbeck, and Robert Noble, Jr. 2008. The influence of cutting bill requirements on lumber yield using a fractional factorial design - Part II: Correlation and number of part sizes. *Wood and Fiber Science* 40(4):610-619.
- Buehlmann, Urs, Xiaoqiu Zuo, and R. Edward Thomas. 2008. Performance evaluation of the least-cost lumber grade-mix solver. *Wood and Fiber Science* 40(3):427-435.
- López-Suevos, F. and C.E. Frazier. 2008. Wood-adhesive interactions in a PVAc latex. *Holzforschung* 62(4):468-471.

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### Trade Journal Publications

- Brian Bond and Earl Kline. 2008. Preventative Maintenance Programs Increase Productivity and Reduce Costs. *TimberLine* 14(10):39.
- Brian Bond and Earl Kline. 2008. Preventative Maintenance Programs Increase Productivity and Reduce Costs. *TimberLine* 14(10):39.
- D. Earl Kline. 2008. Forest Industry Sustainability begins with the Customer. *HMR Executive* 2(11):1-2,4.
- Brian Bond and Earl Kline. 2008. Preventative Maintenance Programs Increase Productivity and Reduct Costs. *Pallet Enterprise* October, pp. 36-37.
- Brian Perkins and Brian Bond. 2008. Scragg Mill Low-down. *Southern Lumberman* September, pp. 22-23.
- Buehlmann, Urs. 2008. Lightweight panel technology set to take off. *FDM Magazine* . September 2008. 58.
- Buehlmann, Urs. 2008. First Lightweight Panel Workshop planned. *FDM Magazine* . September 2008. 10.
- Buehlmann, Urs, Martin Stosch, Torsten Lihra and Karl Forth. 2008. Think Light: Lightweight panel technology to take off. . *FDM Magazine Online* - <http://www.fdmonline.com/ViewWhitePaper.aspx?id=29770> . September 2008.
- Buehlmann, Urs, Matt Bumgardner, Torsten Lihra, and Mary Frye. 2008. How do retailers rate the United States and Canada as furniture sources compared to China?. *FDMOnline* - <http://www.fdmonline.com/ViewWhitePaper.aspx?id=29562> . August 2008.

Buehlmann, Urs, Matthew Bumgardner, and Al Schuler. 2008. Impact on the secondary wood processing industry of the housing downturn: Analysis. Forestweb – iiHub. July 2008. <http://my.forestweb.com/iiHub/index.cfm?event=news.read&id=1177686288> .

Winistorfer, P.M. 2008. The Virginia Initiative: Linking Educational Platforms for the Future of Wood Industry. Hardwood Matters. P. 18-19, December 2008. National Hardwood Lumber Association, Memphis, TN.

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### **Presentations**

Quesada-Pineda, H. 2008. Market Opportunities for US Forest Products in Central America. Department of Natural Resources, Purdue University. FNR 479: Graduate Seminar. Invited as Guest Speaker. West Lafayette, Indiana.

Schuler, Al and Urs Buehlmann. 2008. Hardwood markets – the future offers opportunities and challenges – housing contraction – climate change – globalization – energy security – Asian markets. Ecological Forestry in Central Appalachia. Invited Presentation. Elkins, WV. October 2008.

Audrey Zink-Sharp. 2008. Sustainable Engineered Materials Institute: An Overview. Invited presentation to CNR Forestry Graduate Student Association, December, 2008.

Bumgardner, Matt and Urs Buehlmann. 2008. State of light and market potential in North America. Think Light – Innovative Lightweight Panels Symposium. Grand Rapids, MI. November 2008.

Buehlmann Urs. 2008. Lightweight Panel Network. Think Light – Innovative Lightweight Panels Symposium. Grand Rapids, MI. November 2008.

Quesada-Pineda, H. 2008. Value Added Analysis in Central America Wood Products Industry: A Case of Study. College of Natural Resources, Virginia Tech. WOOD 3784: World Forests and Forest Products. Invited Guest Speaker. Blacksburg, VA.

Winistorfer, P.M. 2008. The Southern Virginia Forest Products Initiative. Virginia Agribusiness Council Fall meeting at Virginia Tech, Blacksburg, Virginia, October 3.

Buehlmann, Urs, Al Schuler, and Matt Bumgardner. 2008. Value-added wood products markets. UNECE Timber Committee and FAO European Forestry Commission Market Discussions. Invited Presentation. Rome, Italy. October 2008.

Buehlmann, Urs, Phil Araman, and Daniel Hindman. 2008. Green Building Programs in the USA. UNECE Timber Committee and FAO European Forestry Commission Market Discussions. Invited Presentation. Rome, Italy. October 2008.

Buehlmann, Urs and Brian Bond. 2008. Research at VT. 2008 RTA Symposium. Invited Presentation. Savannah, GA. October 2008.

Buehlmann, Urs, Matthew Bumgardner and Tom Fluharty. 2008. Banning pallets from landfills – data collection to support state legislation. Technical Forum Presentation. Annual Conference. Society of Environmental Journalists (SEJ). Roanoke, VA. October 2008.

Araman, Phil and Urs Buehlmann. 2008. From science to application – recycling used pallets into flooring. Technical Forum Presentation. Annual Conference. Society of Environmental Journalists (SEJ). Roanoke, VA. October 2008.

Brian Bond. 2008. Maintaining Moisture Content After Drying. Allegheny Dry Kiln Club. Fall Meeting. Elkins, WV. October 16, 2008.



Brian Bond. 2008. Bio-energy from Wood Fiber:Threat or Opportunity? . Keystone Kiln Drying Association. Kane, PA October 22, 2008.

Institute and Galax Community Members. Blacksburg, VA.

Quesada-Pineda, H. . 2008. CAD/CAM impact on the Wood Products Industry. College of Natural Resources, Virginia Tech. NR 1114: Introduction to Renewable Natural Resources. Invited Guest Speaker. Blacksburg, VA.

Quesada-Pineda, H. 2008. Forest Products Trade: Business Opportunitites between Costa Rica and USA. Department of Wood Science and Forest Products. Virginia Tech. Invited as Guest Speaker for Graduate Seminar. Blacksburg, VA.

Buehlmann, Urs, Matt Bumgardner, and Al Schuler. 2008. Managing the downturn. Annual Meeting of the Center for Forest Products Marketing and Management. Invited Presentation, Blacksburg, Virginia, September 17.

Buehlmann, Urs. 2008. Yield gains through process improvements. NOFMA Annual Meeting. Invited presentation, Portland, Maine, August.

Buehlmann, Urs and Al Schuler. 2008. Strategies for remaining competitive in the global economy. Value-added wood products in today's marketplace conference. Invited presentation, Piketon, Ohio, August.

Quesada-Pineda, H. and Lafuente, R. . 2008. Supply Chain Management and its Relationship with Direct Foreign Investment. 12th Entreprenuership Congress. Invited as Key note Speaker. San Salvador, El Salvador.

Brian Bond. 2008. Wood as a raw material for floorirng. Hardwood Flooring Summit. Atlanta, GA.

Brian Bond. 2008. Wood on the Move: checks, splits, gapping, buckling and cupping in wood flooring. Hardwood Flooring Summit. Atlanta, GA.

Haviarova, E., Quesada, H., and R. Gazo. 2008. Competitive Strategies of Furniture Manufacturers. Southern Indiana Network for the Advancement of Manufacturing. Jasper, IN.

Hammett, A. L. 2008. "Linking the IOF with outside organizations –International Centre for Integrated Mountain Development (ICIMOD)". Seminar presented with Dr. M. B. Karki, Deputy Director General of ICIMOD, at the Institute of Forestry in Pokhara, Nepal. July 15. 35 faculty and graduate students attended.