

INSIDE VT WOOD

News from Audrey Zink-Sharp, Interim Department Head

•**Undergraduate and Graduate students please note:** On-line course request opens **October 19** for Spring Semester 2011. Be sure to see your advisor prior to submitting your requests.

•**Congratulations to Richard Johnson, Jesse Paris, and Josh Hosen on completion of their graduate programs.**

Richard Johnson successfully completed his doctoral research titled “TEMPO-Oxidized Nanocelluloses: Surface Modification and Use as Additives in Cellulosic Nanocomposites” on August 18, 2010. Richard is continuing his research as a postdoctoral associate in our department.

Jesse Paris completed his Master of Science program, Carboxymethylcellulose Acetate Butyrate Water-Dispersions as Renewable Wood Adhesives, on August 5, 2010, and **Josh Hosen** completed his Master of Science program, Fundamental Analysis of Wood Adhesion Primers, on September 8, 2010.

Other news of interest:

Forest Products Club cookout a success.



Anthony Muscatello & Jeff Dolan were ready for some football.



Richard Johnson (center) after his PhD defense with Professors Audrey Zink-Sharp (L) and Wolfgang Glasser (R).



Club President, Scott McDonald, got the grill nice & hot.

MS Student, Chao Wang, Conducts Case Study Research in China - Chao Wang & Henry Quesada

Chao Wang, MS candidate under the supervision of Dr. Henry Quesada, has recently conducted research in lean thinking applied to the engineering process in a furniture upholstery plant in China. Chao has focused his research on the furniture engineering process and how to apply lean thinking to the existing engineering process to increase process efficiencies and customer satisfaction levels. During Chao's visit to the furniture plant in China, he collected information and data on the current engineering process using different qualitative and quantitative data collecting methods. The main goal of this case study is to improve the engineering process based on key performance indicators such as lead time, work-in-progress inventory, cycle time and queue time. Secondary focus of the research was the analysis of the engineering process boundary, product family elements, customer demand of the engineering process, and the effect of engineering change orders.

As part of Chao's activities, he gave a workshop on lean manufacturing concepts and application to the supervisors, engineers and technician of this upholstery business unit. Preliminary results of this case study shows that the engineering process accounts for a large portion of the overall production lead time and a lot of wastes exist in the current engineering process. These wastes constrain the engineers from generating their outputs without mistakes or delays for the downstream processes.



MS Candidate Chao Wang teaching the workshop on Lean Thinking in a Chinese upholstery furniture plant.

Furniture manufacturing and quality control workshop in Mexico – Urs Buehlmann

From September 7 to 10, 2010, faculty from Oregon State University and Virginia Tech conducted a four-day workshop on furniture manufacturing and quality control in Delicias, Mexico. Delicias is a major center for furniture manufacturing and trade in Mexico. Conafor, Mexico's forest service, and Muebleros Delicias, the local furniture trade organization, organized and promoted the high-quality event. Seventy-two industry participants joined Scott Leavengood (OSU) and **Urs Buehlmann** (VT) for four days of learning and discussing all things furniture. The first and third day consisted of a series of lectures by Scott and Urs, while the second and fourth day were used to work in two different plants conducting hands-on experiments. The picture below shows Scott Leavengood (center) instructing some of the participants on the goals of Friday's workshop conducted at Vegas Muebles in Delicias. While Mexico's furniture industry has room for improvement, the two faculty were surprised by the keen interest by workshop participants in learning how to improve their operation.



Presenter, Scott Leavengood, center, and participants in the 4-day furniture manufacturing and quality control workshop at the Vegas Muebles plant in Delicias, Mexico.

Renneckar teaches in Sweden

In late August, asst. prof. **Scott Renneckar** traveled to Stockholm to teach in the Wallenberg Wood Science Center (WWSC) Summer Graduate School, “Wood Biopolymers, Structure-Properties Relationships”. Twenty two students with diverse scientific backgrounds from KTH Royal Institute of Technology and Chalmers University of Technology attended the three day course that centered on the polymeric properties of the native and isolated components within wood. The Center was developed under a generous donation of the Wallenberg family for research in advanced wood fractionation and utilization (<http://wwsc.se/>). Approximately \$20 million USD was awarded for the first three years of the center with the strong possibility of continued funding over the next 10 years. After the course was completed Renneckar traveled to Karlstad to participate in the Forest Products Industry Research College Summer Conference, at which, approximately 50 PhD students from Sweden and Finland communicated their research in short presentations. Renneckar then traveled to Chalmers and provided the inaugural seminar for the WWSC, broadcasted live to KTH University. Renneckar noted the excitement and synergy that the faculty and students had in the Center working towards the utilization of woody materials in non-energy based material applications.



Students from the Wallenberg Wood Science Center Summer Course taught in August 2010.



Graduate Student Symposium scheduled for November – Scott Lyon

On November 12, 2010, seven graduate students from the Department of Wood Science and Forest Products will present their research in a Graduate Student Symposium at Fralin Auditorium from 9:00 a.m. to 2:30 p.m. Everyone is invited. See the announcement at the end of this newsletter and watch the department’s website for more details.

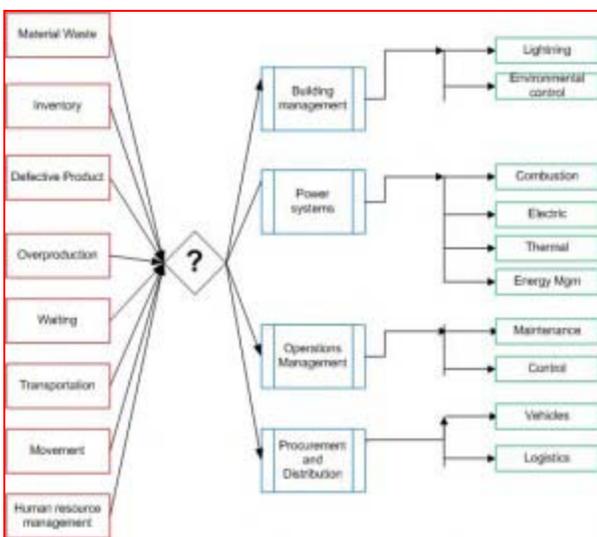
<http://www.woodscience.vt.edu>

<http://www.woodscience.vt.edu/students/graduate/symposium/>

Department of Wood Sciences and Forest Products presented a workshop on Energy Savings using Lean Thinking

by Henry Quesada

Representatives from private, government, non government, and academic sectors attended the workshop Energy Savings using Lean Thinking held at the Riverstone Energy Center in South Boston, VA on September 10, 2010. This workshop delivered academic and practical applications on how industries in the wood products sector could decrease energy consumption by integrating lean thinking principles with energy management methods. Standard energy audits are oriented to the identification of energy management opportunities (EMOs) by looking at the power systems, building infrastructure, and control systems but most of the times they do not consider the impact of management practices in energy consumption. This workshop gave participants academic and practical guidelines in how to integrate lean thinking with energy reduction efforts. The figure below left shows the model being developed at Virginia Tech.



Dr. Earl Kline from Virginia Tech discusses Lean Thinking Principles during the workshop.

Model to integrate Lean Thinking with Energy Management Opportunities

In the first presentation, Mr. Mark Webber from Dominion reviewed the current status and the future of energy in Virginia. The second presentation was given by **Dr. Earl Kline** from Virginia Tech on Lean Thinking Principles. After this, attendees were introduced to a Lean Energy Audit Toolkit (Integration of Lean Thinking concepts and EMOs) at macro level to identify what areas in their processes require immediate attention, followed by examples of wood products industries that have achieved significant energy savings by eliminating waste in their processes. This presentation was given by **Dr. Henry Quesada** also from Virginia Tech.

Please feel free to contact Dr. Henry Quesada at quesada@vt.edu if you have any questions about EMOs and integration with Lean Thinking concepts.

Wood Education and Resource Center sponsors International Hardwood Conference

By Urs Buehlmann

The USDA-Forest Service's Wood Education and Resource Center (WERC) is sponsoring the 3rd International Scientific Conference on Hardwood Processing (ISCHP³2011) to be held on October 16 - 18, 2011 at Virginia Tech, Blacksburg, VA. ISCHP³2011 will bring industry professionals, scientists, association representatives, government employees, suppliers, and customers together to share knowledge, ideas, and to network. The conference will cover hardwood related issues from the source to the customer, discuss recent developments, and show paths into the future. ISCHP³2011 will have a special focus on sustainability and certification and help to further promote the important role of the world's leading renewable, carbon-absorbing raw material.

Concurrent sessions will cover topics from forestry practices and hardwood quality, hardwood processing and optimization, markets, trade, and business insights, to hardwood certification and sustainability. Peer and non-peer reviewed papers will be published from presenting authors. An optional industry tour will be offered after the conference. For more information, visit ischp2011.org or contact Urs Buehlmann (buehlmann@gmail.com, 540.231.9759).



Virginia Cooperative Extension

Upcoming Workshops

Rough Mill Yield Improvement Using ROMI 3.1

The workshop is designed to help rough mill managers, supervisors, and operators improve the performance of their rough mill, achieve reliable quality and deliveries, and decrease costs. Workshop participants will learn how to use USDA Forest Service's ROMI 3.1 rough mill simulation tool to assess improvement scenarios. Participants also will learn about the new least-cost lumber grade-mix solver function embedded in ROMI 3.1.

Date and Location: November 8, 2010. Wood Education and Resource Center (WERC) Princeton, WV.

Registration: \$49 includes refreshments and lunch. See <http://www.woodscience.vt.edu/ROMI3-1/> or email Urs Buehlmann (buehlmann@gmail.com) for more information.

Why Lean?

The workshop is designed for beginners or individuals who want to refreshen their knowledge about Lean management and its benefits to operational success. Lean@Virginia Tech, our student-driven, faculty supported organization focusing on improving the industry's performance through the use of lean principles, is offering this two-day "Why Lean?" workshop at the Doubletree Hotel at Richmond airport. The hands-on workshop will use simulation to demonstrate the power of lean principles and will teach hands-on principles to start the lean journey in your organization. René Aernoudts, executive member of the Lean Global Network (LGN), the network established by Jim Womack and Dan Jones, will help conduct the workshop with experts from the VTLeanTeam.

Date and Location: November 22 - 23, 2010. Doubletree Hotel at Richmond airport.

Registration: \$300 includes refreshments, lunch, and reception. See <http://vtlean.org/club/workshops/> or email info@vtlean.org for more information.

MORE Workshops

Process Improvement Frameworks

This workshop will give the basic knowledge on different process improvement frameworks such as Value Chains, Supply Chain Management, Business Process Management, and Enterprise Resources Planning that can help your firm to decrease costs and positively impact customer satisfaction.

Date and Location: October 22, 2010. Blacksburg, VA

Registration: \$35 includes materials, coffee break, and lunch. Please go to <http://www.cpe.vt.edu/reg/pifw> to register.

Innovation-Based Manufacturing

This workshop will give you an understanding of why innovation based manufacturing is critical to achieve economic development and how it can be pursued. The morning session of the workshop will expose participants to the basic concepts of innovation based manufacturing and how current developments in policy, economic development, and open innovation relate to the practice of innovation in manufacturing

Date and Location: November 11, 2010. Blacksburg, VA

Registration: \$125 includes materials, practical session, coffee break, and lunch. Please go to <http://www.cibm.ise.vt.edu/workshop/index.html> for more information and registration

More information on this workshop is attached at the end of this newsletter.

Supply Chain Management: Trends, Opportunities, and Challenges

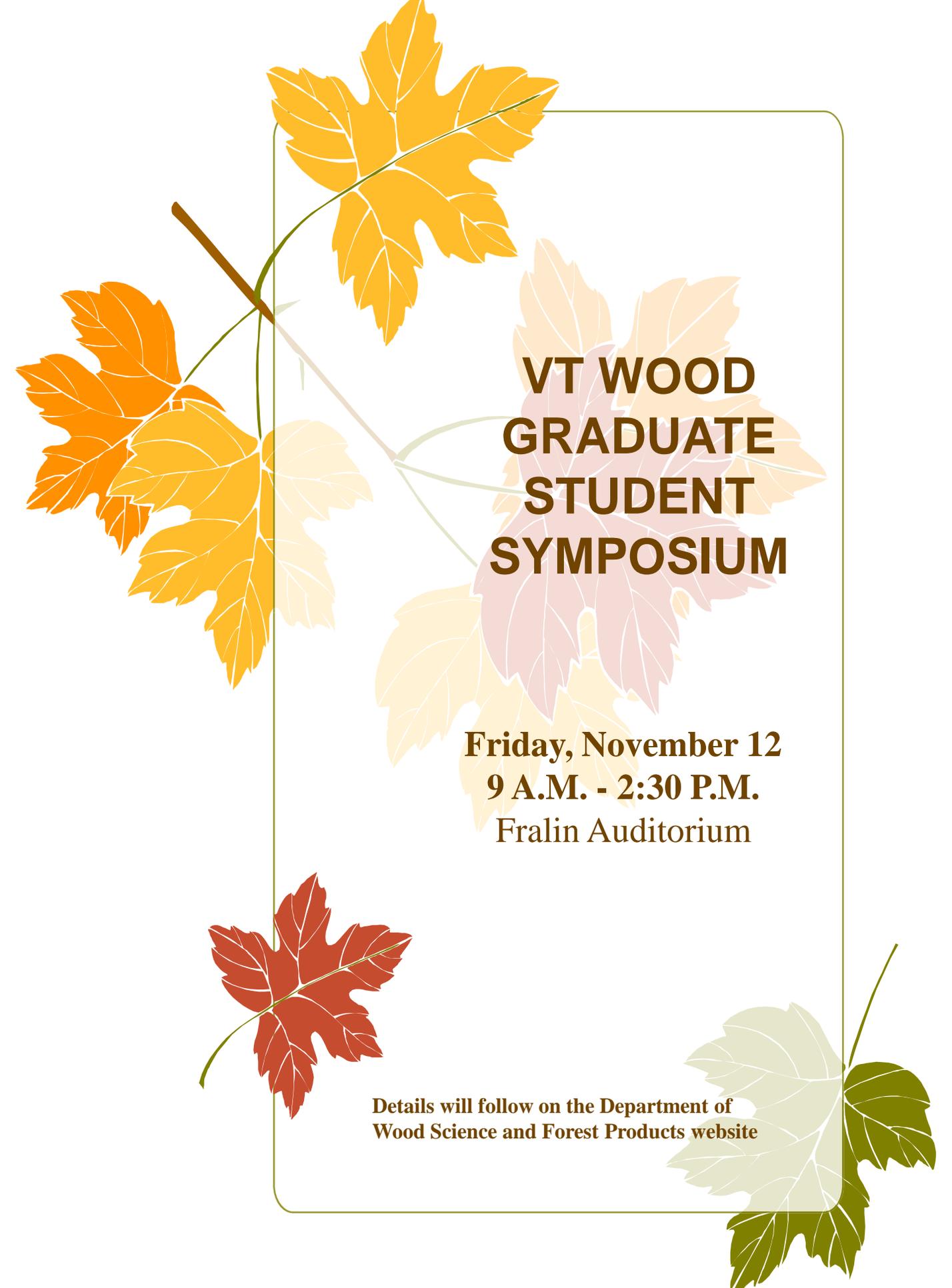
This workshop will focus on the most relevant aspects of supply chain management. We will review SCM basic concepts, third party logistics, SCM information technologies, and supplier relationships among other topics. We will focus on new trends and challenges in SCM that today firms need to be aware of to successfully compete in the market place.

Date and Location: November 12, 2010. Danville, VA

Registration: \$35 includes materials, coffee break, and lunch. Please go to <http://www.ialr.org/news/event-registration> to register.

For more information on any of the workshops visit www.woodinnovation.org or contact Dr. Henry Quesada at quesada@vt.edu or (540) 231-0978.





VT WOOD GRADUATE STUDENT SYMPOSIUM

**Friday, November 12
9 A.M. - 2:30 P.M.
Fralin Auditorium**

**Details will follow on the Department of
Wood Science and Forest Products website**

INNOVATION-BASED MANUFACTURING WORKSHOP

November 11, 2010
8:30 a.m. to 4:10 p.m.
The Inn at Virginia Tech,
Blacksburg, VA

The Oslo Manual defines innovation as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.” This definition makes clear that innovation is not just the creation of a new product but also the strategic improvement of internal processes such as manufacturing. This workshop will give you an understanding of why innovation based manufacturing is critical to achieve economic development and how it can be pursued.

The morning session of the workshop will expose participants to the basic concepts of innovation based manufacturing and how current developments in policy, economic development, and open innovation relate to the practice of innovation in manufacturing. The afternoon session will focus on innovation tools and how these tools can be used to develop innovative manufacturing solutions.

The workshop will also serve as the introduction of the recently established Center for Innovation-based Manufacturing (CIBM) at Virginia Tech.

Workshop Objectives:

- Understand the basics of innovation based manufacturing
- Comprehend how innovation policy plays a key role in economic development
- Understand the impact of open innovation in manufacturing solutions
- Recognize the main aspects of embedding innovation into an organization's structure
- Learn innovation tools to support manufacturing solutions

Who Should Attend:

- Anyone who would like to learn about the innovation process and how to use it to increase business competitiveness and achieve long term sustainability.
- Entrepreneurs, Investors, Policy Makers, Process and Products Engineers, Plant Managers, Process Improvement Managers, Marketing Managers, General Managers, and Financial Managers.
- Investment: \$125. Includes lunch, workshop materials, and coffee breaks.

Registration: Please visit our web page at www.cibm.ise.vt.edu. Further Information: Please contact Dr. Henry Quesada at quesada@vt.edu or at (540)231-0978 if you have any questions.

Agenda

8:30am - 8:45am	Opening Remarks Dr. Jaime Camello, Director of ClbM at Virginia Tech
8:45am - 9:15am	Innovation concepts and ICTAS as an agent of Innovation Dr. Roop Majahan, Director of ICTAS at VA Tech
9:15am - 9:45am	Innovation Policy Dr. Julia Lane, National Science Foundation
9:45am - 10:05am	Break
10:05am - 10:45am	Innovation and Economic Development Dr. Darrene Hackler, George Mason University
10:45am - 11:20am	Innovation practices in Action Dr. Antje Lembcke, Director Gas Turbine Engineering at Siemens
11:20am - 12:00pm	Panel discussion Dr. Jaime Camello, Director of ClbM at Virginia Tech
12:00pm - 1:00pm	Lunch
1:00pm - 2:30pm	Innovation Lab, Part 1 Dr. Jose M. Vicente-Gomila, Polytechnic Institute of Valencia
2:30pm - 2:50pm	Break
2:50pm - 4:00pm	Innovation Lab, Part 2 Dr. Jose M. Vicente-Gomila, Polytechnic Institute of Valencia
4:00pm - 4:10pm	Adjourn Dr. Jaime Camello, Director of ClbM at Virginia Tech

About the Center for Innovation-based Manufacturing:

The Center for Innovation-based Manufacturing (ClbM) is a recently formed center that aims to solve current manufacturing issues and help the university commercialize new technologies. The innovation-based manufacturing goal is to boost the commercialization potential of basic research that is currently constrained by the lack of adequate processes and systems and provide new tools to improve current processes. In order to achieve this goal, new pedagogical research in innovation principles related specifically to manufacturing is needed. The proposed center will focus on the development of new innovation methodologies and their application to challenging manufacturability problems across multiple areas such as renewable energies, micro- and nano-manufacturing, medical devices, etc. ClbM is actively working on the definition of the manufacturing of the future and the future of manufacturing.