

INSIDE VT WOOD

Greetings Hokie Fans,

Fall Football season is here and the Virginia Tech team is off to a great start. The semester is also in full swing, and lots of student activities are going on.

The good news is that our student enrollment in the department is growing! And this is all due to the hard work of our faculty, and the outstanding work of a group we call the Wood Science and Forest Products “Student Ambassadors”. This is a lively group of student volunteers from the department that help us spread the good word about all that the Department has to offer, and the importance of work our graduates when they go out into the world. Thanks also to our departmental “EMC Committee” who work with those students (No, it doesn’t stand for Equilibrium Moisture Content. It’s the Enrollment Management Committee!). The EMC is a rotating group of faculty in the department lead by Dr. Earl Kline this year that directs the Student Ambassadors and does a great job of coordinating other student-oriented activities.

On other fronts, a recent highlight for the department was the sponsorship of 6 events for “Sustainable Blacksburg” Week (Sept. 19-24th).

These included the events:

- Improving Your Business by Applying Lean Principles
- Sustainable Packaging
- How to Reuse a Building!
- Sustainable Materials—Where Do They Come From And Where Do They Go?
- The Corrugated Board Design Contest
- Making and Using Sustainable Materials & Bioenergy



The stars of the department are our students! Our 2011 student ambassador group.

One of the highlights of the week was an event sponsored by our Packaging group in the department. Dr. Bob Bush coordinated a competitive corrugated “packaging design” contest. We had some very creative and innovative entries, but more on that with pictures of the winning designs in next month’s newsletter.

As always, we look forward to hearing from you, our alumni and friends, about the things you are involved with, and perhaps even with something for the newsletter.

Go Hokies!

Barry Goodell

FACULTY PROFILE



Brian Bond

Brian Bond joined the department in the fall of 2002, from the University of Tennessee, where he was an assistant professor and extension specialist in Forest Products. His teaching, research and extension program focuses on the sustainable manufacture and use of wood products.

Dr. Bond's extension component includes workforce development in wood processing, technical assistance to wood products businesses and citizens of Virginia and providing continuing education. He regularly conducts two drying workshops, one focused on industrial lumber drying and another for small-scale businesses and hobbyists. He works closely with industry associations, such as the National Hardwood Lumber Association, to provide educational opportunities and expertise to the region's manufacturers of hardwood products. He is a board member of the Woodwork Career Alliance of North America (WCA) which is a non-profit organization actively promoting a skilled workforce

for the advanced woodworking industry with: Woodwork Manufacturing Skill Standards - observable and measurable standards for tool and machine operations to evaluate performance and results produced by woodworking professionals and Credentials / "Woodwork Passport" – a portable, permanent record of a woodworker's level of competency in tool and machine operation. He is also the secretary and treasurer of the Allegheny Dry Kiln Club, which is a group composed of lumber dry kiln operators, managers, and yard personnel, that meets to disseminate the latest in lumber drying technology and information. He is a frequent contributor to Independent and Sawmill and Woodlot Management, Pallet Enterprise and TimberLine magazines.

Brian co-teaches WOOD3634 Wood Products Manufacturing, a class, which focuses on developing a strong technical foundation on the manufacture and use of wood products and moisture relations, wood drying and secondary manufacturing. He also teaches a portion of the graduate class 5948 Fundamentals of Wood Science.

Last year saw his involvement in two new teaching endeavors, the development and co-teaching of a special study: Wood Identification in Historic and Modern Wood Buildings with Dr. Joe Loferski and a college level course: Leadership in the Natural Resource Professions with Dr. Steve McMullin. The course is a two-semester sequence designed to prepare selected students for leadership roles in the natural resources professions.

His research interests are currently focused on improving the competitiveness of the hardwood lumber industry. Three of his current research projects include the impact of energy prices on the hardwood industry and methods the industry can use to improve energy efficiency; the prediction of mineral stain in red oak based on growth site variables; and the impact of vacuum drying on the efficiency of hardwood products manufacturing.

Meet the Fall 2011 WEI Team

By Earl Kline

The Fall 2011 Wood Enterprise Institute (WEI) has completed its fourth week and students are leading efforts toward gearing up for this year's business. They plan to offer the customizable drink coasters again for sale this year but are also working on a new product design to see if it can be profitably added to WEI's product line. In the upcoming weeks, student activities will focus on replicating last year's WEI production process and apply their problem solving skills to analyze limitations of the business and then make appropriate improvements.



2011-12 Wood enterprise Institute Team (L-R): Earl Kline (faculty advisor), Edmund Murray, Grant Vander Kolk, Kyle Simmons, Jeff Dolan, Patrick Smith, Andrew Blevins, Nate Slemp, Josh Hertzler, Kyra Schaeffer.

The Wood Enterprise Institute is a student owned and faculty supported enterprise that is recognized and respected as a leading student learning environment for creativity, innovation, and entrepreneurship. During Fall Semester, the WEI team works together to develop a business plan which describes all of the market research, product design specifications, operations, and cost assumptions. The team is then required to successfully demonstrate Spring Semester that the plan works. The score, in terms of business and financial metrics, is discussed each week to show how well operations progress. The Spring Semester is always challenging because the student team sets very high expectations in the Fall and they soon learn that no matter how carefully detailed their plan was, there are so many “little” things that can get in the way. How the team responds to the many challenges is where the true entrepreneurial learning occurs! In essence, the WEI business acts as a laboratory that provides many learning opportunities whereby students can practice a scientific problem-solving discipline to systematically find and apply knowledge in ways to adapt and improve the business.

Glass Packaging Institute Supports VT Packaging Program

By Robert Bush

The Glass Packaging Institute (<http://www.gpi.org>) and, in particular, Mr. Rick Bayer (Chairman, GPI Academic Sub-Committee), have aided the growing VT packaging program in several ways over the past year.



Narrow Neck Sidewall Thickness Gauge

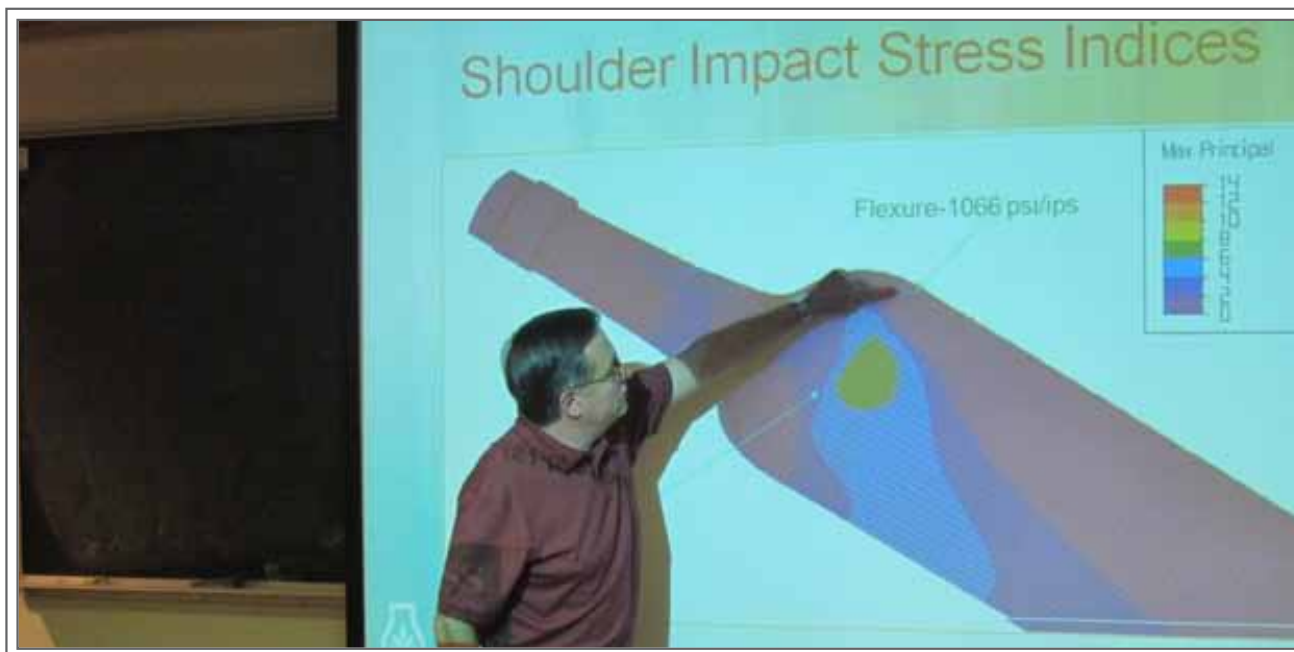


AGR Tilt Table (Photo: AGR international)

During Spring Semester 2011, Mr. Bayer lectured in Dr. Bush's *Principles of Packaging* (WOOD 2104) course. Over the summer, Mr. Bayer arranged faculty member visits to an Owens-Illinois glass bottle manufacturing facility and to a Miller-Coors brewing and bottling facility. Also, Mr. Bayer arranged the donation to two pieces of equipment for measuring the properties of glass containers—an AGR Tilt Table and a Narrow Neck Sidewall Thickness Gauge. With the equipment came numerous samples and teaching aids.

This semester, Fall 2011, Mr. Bayer lectured about glass and its use for packaging to the students in *Principles of Packaging* as well as helping with a laboratory exercise where students used the donated equipment to expand their knowledge of glass as a packaging material.

Our sincere thanks to the Glass Packaging Institute and Mr. Bayer for their significant help.



Mr. Rick Bayer (Glass Packaging Institute) discusses stress distribution in a glass bottle with the student in *Principles of Packaging* (September 2011)

Students Help Recruit Students for Study Abroad in Ireland

By Robert Bush

Some of the students who participated in *Culture, Natural Resources, and Design in Ireland* (a Spring 2011 Study Abroad course led by Drs. Bush And Hammett) met again at the VT Study Abroad Fair on September 21 to speak with potential participants in the 2012 course. Katrina Stanziano, Christine Foote, Shawn Crawford, and Ellen Robertson (Left to Right) spoke with students about their experience while in the course - as well as practical information like what to pack for a trip to Ireland. Our thanks to Katrina, Christine, Shawn and Ellen for their help.



Virginia Tech Professor's Cellulose-for-Biofuels and Carbon Cycling Research Featured in July 14 Issue of Science Journal



Barry Goodell

The July 14 issue of *Science*, the world's leading journal of original scientific research, features the findings of a global team of cellulose researchers, including Professor Barry Goodell, head of Virginia Tech's Department of Wood Science and Forest Products in the College of Natural Resources and Environment.

Researchers have been studying how plants are decomposed at the end of their life span in order to provide insight into several important issues ranging from the development of cellulosic biofuels to the cycling of carbon in the environment. How woody plants evolve and how fungi, the primary decomposers of wood in the forest, work symbiotically with them is important for a number of reasons, including the development and sustainable production of biofuels.

The research team, which also included students who studied under Goodell, summarized its collective findings in the paper, "Plant cell wall decomposing machinery underlies the functional diversity of forest fungi."

"The journal article explains how common 'wood rotting' fungi have evolved with plants to become highly efficient degraders of plant biomass in nature," said Goodell. "In particular, our research team showed that certain types of fungi became more energetically efficient over time, as they adapted to the evolutionary changes that occurred in trees — a co-evolutionary process."

Because of the importance of cellulosic materials in biomaterials and bioenergy applications, understanding the cell wall degrading machinery is key to isolating the basic building blocks of cellulose sugars, which can then be used to produce renewable biofuels and chemicals.

While the article's primary author is from England, multiple labs from around the world worked on the project.

Goodell noted, "The international collaboration demonstrated the global relevance of the research, and it was essential to have this sort of teamwork to move a project of this size forward. The research has practical implications in that it provides tools to deconstruct cellulosic materials and wood by mimicking nature to produce some of the basic building blocks that are needed in green industries."

In the majority of northern hemisphere forests, fungal-modified lignin residues from decomposing trees make up as much as 30 percent of the carbon in the soil; these carbon residues are very long lived. Lignin is the organic substance binding the cells of trees and other woody plants.

“This sequestered carbon represents an important carbon sink in the environment,” Goodell pointed out. The work presented in the “Science” article helps to confirm an earlier hypothesis developed 15 years ago by Goodell and Jody Jellison, associate director of the Virginia Agricultural Experiment Station, on the role of free radical chemistry in the degradative mechanisms responsible for the production of these carbon residues.

In addition to the importance of the research in shedding light on the co-evolution of fungi and plants, and defining a path for carbon sequestration in the environment, the work also points to new biochemical pathways for the deconstruction of cellulose from sustainable biomaterials that will be useful in the production of feedstocks for cellulosic biofuels.

Virginia Tech’s Center for Unit Load Design Names New Director

Laszlo Horvath of Blacksburg, Va., assistant professor of practice in the College of Natural Resources and Environment, has been named director of Virginia Tech’s Center for Unit Load Design. The center, based in the Department of Wood Science and Forest Products, tests and develops technologies to optimize material handling efficiency and includes experts in packaging, palletization, material handling, and unit load design.

“Strong faculty commitment is essential to shape the future of the center to be a global leader in packaging distribution and beyond,” said Barry Goodell, head of the department. “Dr. Horvath is well positioned to take the reins of the center and provide dynamic leadership.”

Horvath, who has strong expertise in secondary packaging, advanced wood mechanics, timber engineering, and industrial engineering, will work to expand the center and open up new dimensions for packaging distribution research. He has worked with industry and in personnel management as a project manager for his family’s furniture manufacturing company in Hungary. Horvath holds master’s degrees in wood engineering and engineering management from the University of West Hungary and a doctorate in forest biomaterials from North Carolina State University.

“Working as a team player, Dr. Horvath will grow the center’s capacity for research and continue to build its service-to-industry mission,” Goodell said. “In addition, he will strengthen the link between the center and the department’s academic mission to enhance both education and outreach opportunities for students and industry.”

“The department’s goal is not only to provide excellent service to both small and large businesses through the center’s activities, but also to produce high quality and well-trained professionals to work in the field,” Goodell continued.

Marshall “Mark” White, professor emeritus and former center director, said, “I am eager and committed to working with Dr. Horvath to ensure the future growth and development of the center to carry on the legacy of excellence.”

Virginia Tech is a recognized leader in research and instruction on pallet structural design and performance through the activities of the Center for Unit Load Design and the William H. Sardo Jr. Pallet and Container Research Laboratory. White, who serves in an advisory role to the center, maintains strong ties to both the center and the wood science department. Former center director Ralph Rupert will remain on the team of faculty and staff members who are “committed to furthering the excellence of the center through teamwork,” according to Goodell.

The packaging educational program at Virginia Tech has gone through significant changes in the last year, including the hiring of two new faculty members, and has grown to better serve the needs of students, the packaging industry, and the citizens of Virginia. Building on its traditional strength in distribution packaging and unit load design, the program has expanded to include additional areas in the field of packaging.



Laszlo Horvath

Horvath joined the faculty in 2010 along with Assistant Professor of Practice Young Teck Kim, who brings expertise in compostable packaging polymers, “smart” packaging, and engineering. Longtime faculty member Professor Robert Bush has also joined the packaging program, contributing his experience in forest products marketing and management.

The undergraduate curriculum, which is being redesigned to better reflect the scope of the industry and prepare graduates to work in a broader range of positions, includes a strong focus on sustainability, emphasizes experiential learning, and teaches continuous improvement principles such as lean manufacturing.

The development and implementation of standardized procedures at the Center for Unit Load Design will facilitate more undergraduate student involvement. With proper training, students will participate in non-confidential research and interact with industry partners on testing and research.

The center will continue to serve as the outreach arm of the packaging program by offering short courses and workshops, and providing testing services to the packaging industry.

Edgar Delivers Lecture on Polysaccharides in Drug Delivery in the Netherlands

Professor Kevin Edgar recently delivered an invited lecture on “Novel Cellulose Derivatives for Drug Solubility Enhancement” as part of the second European Polysaccharide Network of Excellence (EPNOE) meeting in Wageningen, Netherlands (August 29 – September 2). This international, interdisciplinary meeting brings together researchers from all over Europe as well as guest lecturers from all over the world to discuss the latest findings related to the synthesis and utilization of polysaccharides and derivatives from nature to meet global sustainable materials needs. This year’s meeting was attended by approximately 250 people and showcased advances in synthesis of polysaccharide derivatives for biomedical applications, the characterization of novel natural polysaccharides, and the understanding and control of the enormous diversity and complexity that characterize polysaccharides.



Edgar and Skjåk-Bræk (right) at NUST

Edgar Explores Tissue Engineering Opportunities in Norway

On September 2, Professor Kevin Edgar visited the Norwegian University of Science and Technology (NUST) in Trondheim, Norway to deliver an invited lecture on the “Synthesis of Chemically Modified Alginate Derivatives”. Edgar collaborates with Professor Gudmond Skjåk-Bræk at NUST on the modification of abundant, renewable alginates from seaweed for use in drug delivery, tissue engineering, and other high value applications. Edgar presented information on the novel chemistry for dissolution and modification of alginic acid, developed by graduate student Siddhesh Pawar in his laboratory, which has opened new windows for the use of alginates to improve human health.

Wood 5004 Seminar

Day: Friday
Time: 3:00-4:00 pm
Place: 102 Brooks Center
(unless noted otherwise)

Fall
2011

- Aug. 26 **Jung Ki Hong** – Macromolecular Science and Engineering (PhD)
Cellulose Nanocrystal Reinforced Polymeric Scaffolds for Bone Tissue Engineering
- Sept. 2 **Junia Pereira** – Macromolecular Science and Engineering (PhD)
Synthesis of New Pullulan Derivatives for Oral Drug Delivery
- Sept. 9 **Robert Haupt** – Macromolecular Science and Engineering (PhD)
Accelerating Wood Resin Cure: A Model Compound Study
- Sept. 16 **Jiyoun Joo** – Forest Products (PhD)
Modeling the compressive stress distributions at the interface between a pallet deck and distribution packaging
- Sept. 23 **Jonghun Park** – Forest Products (PhD)
An Exploration of Changes in Environmental Sustainability of Packaging, 1971 to 2011
- Sept. 30 **Edgar Arias** – Forest Products (PhD)
Factors Impacting the International Value Chain of Hardwood
- Oct. 13 (Thu) 2–3 pm **Dr. Henri Bailleres** – Agri-Science Queensland
The Forest Product Innovation Team: an Overview to the Research & Development Objectives of the Queensland Government
- Oct. 21 **Dr. Sean McGinnis** – Dept. of Materials Science and Engineering
Life Cycle Assessment (LCA): Applications and Challenges
- Oct. 28 **Shawn Crawford** – Forest Products (MS)
Reducing Energy Waste in the Forest Products Industry
- Nov. 4 **Dr. Urs Buehlmann** – Dept. of Wood Science and Forest Products
Challenges and Opportunities of the U.S. Wood Industry
- Nov. 11 **Justin Morris** – Forest Products (MS)
Reuse and Recycle of Construction Waste
- Nov. 18 **Mohammad Tasooji** – Forest Products (PhD)
Acrylated Epoxidized Soy Oil as an Alternative to Urea-Formaldehyde Resin in Making Wheat Straw Particleboard
- Dec. 2 **Johanna Madrigal** – Forest Products (PhD)
Factors Affecting the Sustainability of a Continuous Improvement Process: A Case Study

The Department of
Wood Science & Forest Products
at Virginia Tech



Equipment “Wishlist” in the Department to Enhance the Undergraduate Student Experience

CAN YOU HELP US?

With advances in technology and limited budgets, it is often difficult for Universities to keep up and provide students with hands-on experience using the latest equipment. Often, it is not even necessary to have the very latest equipment as the “base model” can provide a good educational experience in our classes and labs.

With that in mind, the Department has put together an Equipment Wishlist to send out to our Alumni and Friends. The hope is that those of you in a position to provide either new or used equipment, or funding to purchase such equipment, might help us out in the Department. Many of these are “big ticket” items, but some are more modest. Depending on your sub-field, some of the equipment may not even have recognizable names! We thought we would try this approach though and see what it might net. Some folks in Industry may be aware of equipment that is being changed out, and the older system may be just perfect for our needs.

Please note that we have limited space in our Brooks Lab facility, so we do need to be selective. The faculty have discussed the list and developed the list based on what they think is most needed, and that will be maximally used.

Thank you for any help, and if you have ideas for other ways to help us bring in important equipment pieces to grow the educational experience for our students, please let us know. Thank you.

Equipment needs for Teaching and Student Learning in Packaging, Mechanics, and Innovation and Design activities at Virginia Tech

Vision: To create a world-class undergraduate student workspace that is recognized and respected as a leading student learning environment for creativity, innovation, and entrepreneurship.

Innovation and Design	Teaching Purpose	Short/Long Term Need
CNC Machine	Rapid prototyping, proof-of-concept testing	Short
CIM Cell (robot/PLC/conveyor/bar code/RFID)	Automation, materials management	Long
Dust collection system	Minimize/eliminate dust—sustain cleanliness	Short
Finishing/spray booth	Finish technologies and “green” finishes	Long
CAD/CAM studio (hardware & software – Pro E, SolidWorks, etc.)	Product concept, design, and modeling	Short*
3-D scanner	Rapid prototyping, product modeling	Short*
Video conferencing system	Meetings, distance teaching/learning	Short
Electric lift	Facility maintenance	Long
Flexible electrical/air service	Flexible manufacturing and work cells	Short
Saw-stop safety table saw (2)	Safety for students	Short
Mobile end-feed table	Materials management	Short

*Similar to Packaging System & Design request

Mechanics/Sustainable Structures	Teaching Purpose	Short/Long Term Need
MTS controller and data acquisition system	Current system no longer supported by MTS; WOOD 3314, WOOD 2554, WOOD 1234, other classes conducting testing	Short
I2 Stereo Microscopes	WOOD 1234, special study; provide more student access to microscopes	Short
Dual Axis Force Plate (2)	WOOD 3314, WOOD 5324; physical demonstrations, biomechanics,	Short
V20 Nail Kicker by Reconnix (2)	WOOD 3324, Deconstruction; disassembly of wooden structures, preparing bioenergy sources	Short
High End (Ergonomic) Safety Harnesses (2-4, possibly different brands, quality)	WOOD 3314,WOOD 4984 (DWS), safety training; demonstrate use/quality of different safety harness	Short
Vermeer HG200 Portable Grinder	WOOD 3324, Deconstruction, Bioenergy generation source	Short
Packaging Systems & Design	Teaching Purpose	Short/Long Term Need
3D Scanner	Accelerate the primary package and product design	Short
Texture analyzer and/or MTS 250 lbs load cell	Testing various mechanical properties of packaging products and contents	Short
Rapid Prototype maker	Rapid prototyping and primary packaging design concepts	Short
Gas Permeability Tester (O2, H2O, CO2)	Studying the interaction between packaging materials and products	Short
Digital printer	Package design concepts, printing and labeling studies	Short
Bench top Extruders (single/ twin screw type for casting or blown film)	Primary units for Packaging polymers and production areas	Short
Digital Micrometer	Measuring the thickness	Short
Vacuum sealer	Producing Vacuum packaging system	Short
SolidWorks CAD program	Accelerate the product design	Long

Controller for the vibration table	The current controller barely works	Long
Hot seal maker	Study of sealing effect of packaging materials	Long
UV/Visible/Fluorescent/Chemiluminescent spectrometers	Designing smart packaging sensor for Food packaging	Long
Melt Index/Rheometer	Understanding of viscosity of plastic polymers	Long
Colorimeter	Measuring the optical transparency	Long
Bench top Injection /Blow molding machines	Understanding of rigid plastic packaging productions	Long
Newer HPLC/ GC-MASS spectrometer	Analyzing various physical properties of packaging materials and system	Long
DSC/DMA/TGA/TMA	Understanding of thermal properties of packaging materials	Long

UPCOMING Workshops and Events

Why Lean Safety?



Two-day Workshop on Lean and Safety October 26-27, 2011

\$600 per person

(Lunch and coffee breaks included)

Free for Lean Club Members

Continuous Education Credits (CE) available

Location

Holiday Inn Express Hotel & Suites
(Reservation code "VT Lean")
4912 S. Miami Blvd.
Durham, NC 27703
(919) 474-9800

Contact Us

Web: www.vtlean.org/club/workshops/
Mail: 1650 Ramble Road,
Blacksburg, VA 24061
Phone: (540) 443 6688
E-mail: info@vtlean.org



Day 1 - 8:00am - 5:00pm

- Welcome and introduction
- Expert speaker
- What keeps you awake at night? - discussion about your problems regarding safety
- Value stream mapping and safety - current state
- Real world business case - part one
- Lean and safety - introduction and principles
- Reception

Day 2 - 8:00am - 4:00pm

- Real world business case - part two
- Value stream mapping and safety - future state
- Lean and safety - organization, culture, and regulations
- What keeps you awake at night? - problem solving and lessons learned

Outcomes

- Understand how lean and safety are interrelated
- Improve safety outcomes
- Manage safety more effectively and efficiently
- Access to lean community

2011 Innovation-Based Manufacturing Workshop

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.

Workshop Outline*

8:00am - 8:15 am	Opening Remarks Dr. Jaime Camelio, Director of CibM at Virginia Tech.
8:15am - 9:00 am	State of U.S. Manufacturing and Need for Innovation Douglas Woods, Association For Manufacturing Technology
9:00 am- 9:30am	SBIR Tools to Stimulate Technology Transfer National Science Foundation. Speaker TBA
9:30am - 10:00 am	Innovation Systems Marina Ranga, Stanford University
10:00 am - 10:15	<i>Break</i>
10:15 am - 10:45 am	Industry Success Story Verium Diagnostics, William Christy
10:45 am - 11:15 am	Industry Success Story Sayre Enterprises, Inc, Scott Sayre
11:15 am - 12:00pm	Panel discussion Moderator Jim Flowers, Director of VTKnowledgeWorks. William Christy, Verium Diagnostics John Provo, Office of Economic Development at VT Scott Sayre, Sayre Enterprises Inc.
12:00pm - 1:00pm	<i>Lunch.</i>
1:00pm - 3:00pm	PARALLEL SESSIONS: Innovation Tools in Action Virginia Tech, Christopher Williams GenEdge, Paul Bolesta
3:00pm - 3:30pm	<i>Break</i>
3:30pm - 4:30pm	Innovation Competition Sponsored by VTKnowledgeWorks
4:30pm - 4:40 pm	Adjourn Dr. Jaime Camelio, Director of CibM at Virginia Tech.

*Subject to change

Presented by the



Workshop Description

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 need for innovation in manufacturing
- 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
- How these tools can be used to develop innovative manufacturing solutions.

Workshop Objectives

- Understand the need for innovation in manufacturing
- Comprehend how new SBIR programs can help support the technology transfer out of the university
- Understand the impact of innovation systems
- Understand the role of entrepreneurship in innovation
- Learn innovation tools to generate and commercialize ideas

Location, Date and Registration

- Date: November 8, 2011
- Time: 8:00 a.m. to 4:40 p.m.
- Location: 31H Graduate Life Center, Otey Street, Blacksburg, VA 24061
- Registration: \$100**. Go to:

<http://www.cpe.vt.edu/reg/ibmw/>

Includes materials, coffee breaks, and boxed-lunch.

**FREE for VT students, faculty and CRC companies.

Further Information

- <http://www.cibm.ise.vt.edu/>
- Contact Dr. Henry Quesada at quesada@vt.edu
- Or at (540)231-0978 if you have any questions.





ISCHP³11

INTERNATIONAL
SCIENTIFIC CONFERENCE
ON HARDWOOD PROCESSING



VirginiaTech



Announcement:

ISCHP³11, the third International Scientific Conference on Hardwood Processing will be held from October 16th to 18th at The Inn at VirginiaTech. Over 100 participants from all over the world are expected to listen to more than 60 presenters delivering the latest insights about hardwoods from trees to final products. Mark Barford, President NHLA, Ed Pepke, Senior Timber Trade Analyst, European Forest Institute, Alex Finkral, Senior Forester, The Forest Land Group, and Maud Hinchee, Chief Technology Officer, ArborGen, Inc., the conference's invited keynote speakers, will provide up-to-date information about the status of the hardwood industry and hardwood markets, about hardwood certification, and about the future of the hardwood resource. Concurrent sessions will be held covering the following areas:

- Hardwood Forestry Practices and Hardwood Quality
- Hardwood Supply Chain Management & Manufacturing
- Hardwood Processing and Optimization
- Hardwood Markets, Trade, and Business Insights
- Hardwood Certification and Sustainability
- Hardwood Innovations of the Future

ISCHP³11 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. ISCHP³11 will have a special focus on sustainability

Supporters



and certification and help to further promote the important role of the world's leading renewable, carbon-absorbing raw material.

ISCHP³11 will benefit attendees with ideas and knowledge from practitioners, scientists, and other experts from around the globe about the hardwood value chain - from the forest to the end customer.

CONFERENCE EVENTS

ISCHP³11

Timetable of conference events

Oct. 16, 2011

6:00pm - 8:00pm ISCHP³11 reception

Oct. 17, 2011

8:00am - 10:00am ISCHP³11 opening session

10:00am - 5:00pm Presentation and poster sessions

6:30pm - 10:00pm Banquet

Oct. 18, 2011

8:00am - 12:00pm Presentation and poster sessions

1:00pm - 3:00pm ISCHP³11 closing session

Oct. 19, 2011

8:00am - 5:00pm Optional industry tour

ADDITIONAL INFO

ISCHP³11

For additional information, contact:

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540-230-7335 (cellular)
buehlmann@gmail.com (email)
<http://www.ischp2011.org> (web)