



The Department of

SUSTAINABLE BIO-MATERIALS

SUMMER
PACKAGING
TOURS IN
MINNESOTA
& VIRGINIA

DEPARTMENT
WELL-REPRESENTED
AT IWF
MORE

2014 GRADUATE
STUDENTS
COMPLETION



Virginia Tech Packaging Systems and Design student Anthony Clayton (second from right) and professor Robert Bush (second from left) observe a prototype package filling machine at Massman Automation Designs, LLC in Villard, Minnesota.

VIRGINIA TECH PARTICIPATES IN 2014 PMMI PACKAGING TOUR

BY BOB BUSH

Packaging System and Design student Anthony Clayton and professor Robert Bush spent a portion of the summer participating in the 2014 Packaging Machinery Manufacturers Institute industry tour in Minnesota. The tour included an undergraduate student representative from packaging programs at Michigan State, the University of Wisconsin, Clemson University, Rochester Institute of Technology, San Jose

State University, California Polytechnic State University and, of course, Virginia Tech. Two faculty members, Dr. Fritz Yambrach (San Jose State University) and Dr. Robert Bush were invited to participate in the tour. The five-day event took students to 13 packaging companies and exposed them to a variety of packaging applications – from eggs to lubricants, beer, adhesives, pizza, and ammunition. Also, participants visited companies that manufactured equipment used to make and fill packaging. Virginia Tech thanks PMMI for including us in this great learning opportunity.

COVER: Virginia Tech Packaging Systems and Design student Anthony Clayton (left) along with fellow student participants Amy Selig (Rochester Institute of Technology, center) and Juana Villa (Cal Poly, right) examine packaging at Summit Brewing Company in St. Paul, Minnesota



CPULD staff at the Elizabeth Arden global distribution center. Standing from left to right: Zack Shiner, Steven Brown, Carter Hadley, Joe Dietrich, Matt Shiller, Erica Roesel, and Dr. Bouldin. Kneeling: Matt Baker and Kopi Magyar.

CPULD TOURS FACILITIES IN SALEM BY JOHN BOULDIN

The Center for Packaging and Unit Load Design sponsors several student interns each year. These students are selected based on their leadership potential for the industry and learn research methods for testing packages and unit loads through hands-on participation in the lab. In addition, the students earn ISTA certification and learn the specifics of how packaging affects global commerce and sustainability. In June of 2014 the staff of the CPULD took a field trip to visit two design/warehouse/distribution facilities in Salem, Virginia.

Executives from Elizabeth Arden and Packaging Corporation of America presented lectures on the importance of packaging to individual

businesses and to the economy at large, and guided the group through their warehouse and distribution centers. These firms not only hire VT students for their in-house internship programs, but actively recruit graduates from the VT Packaging Science program for full time employment. During these tours, the students learned about plant safety, material flow optimization, the design of corrugated packaging, and the management systems and technology necessary to operate a global distribution center. The students were fascinated to see how their internship experience and the testing methods learned in the laboratory relate to actual practices in the field.



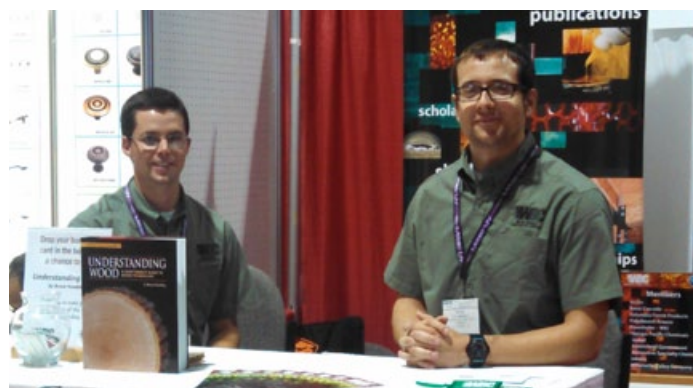
SBIO students and professor Earl Kline working at the Department's booth during the 2014 IWF

DEPARTMENT WELL-REPRESENTED AT IWF 2014 IN ATLANTA

BY LINDA CAUDILL AND HENRY QUESADA-PINEDA

Faculty and students from the Department of Sustainable Biomaterials and the Wood-Based Composites Center I/UCRC attended the 2014 International Woodworking Fair & Expo in Atlanta, Georgia in August. The bi-annual show highlights equipment and tools, raw materials, and processes from almost 1000 exhibitors that support the wood products industry, and is in Atlanta, Georgia's World Congress Center. The Department and WBC booths were located in separate Exhibit Halls, but gave Virginia Tech plenty of exposure during the three-day show.

Both the Department and WBC booth hosted a steady stream of visitors, including alumni from both programs. Department Head Bob Smith and Professors Henry Quesada, Earl Kline, Brian Bond and Urs Buehlman were joined by students Jeremy Withers, Danny



WBC I/UCRC students Cole Burch and Kyle Mirabile hard at work at the WBC booth.

Hazelwood, and Kopy Magyar at the Sustainable Biomaterials booth. WBC graduate students Cole Burch and Kyle Mirabile joined WBC Managing Director Linda Caudill at the WBC's booth.

The Wood-Based Composites Center gave away an excellent door-prize, the textbook *Understanding Wood, A Craftsman's Guide to Wood Technology*, by R. Bruce Hoadley. Dr. Buehlman taught two workshops: Housing Markets and the Secondary Woodworking Industry: Lessons from the Downturn, and Lean Safety for Wood Products Industries.



Left: Former WBC student Josh Hosen (M.S., 2010) is now Manager of Certification Services for the Hardwood Plywood Veneer Association in Reston, Virginia. Right: Stephanie Gomon Rodrigue (MS, 2004), owns and operates her own forest products marketing business in Asheville, North Carolina.

It was nice talking to all types of industry professionals about what we do, but most satisfying

was seeing former students and hearing about their successes.



USDA FOREST PRODUCTS LAB M&U UNIT HOLDS PLANNING SESSION BY BOB SMITH

The Marketing and Utilization Unit (M&U) of the USDA Forest Products Laboratory recently held a national planning session for their unit



in northern Wisconsin. Thirty-five industry,

association, government, and university leaders in their fields were asked to join them to identify key items for research and planning for the future of this Unit. Among the invited participants were five graduates from the Department of Sustainable Biomaterials who hold positions in M&U across the country.

Top left to right: Dr. Scott Bowe (University of Wisconsin Wood Products Extension Specialist); Bob Smith, Department Head, SBIO; Dr. Delton Alderman (USDA Forest Service Research Scientist, Northern Region); Dr. Patrick Rappold (Arizona Department of Forestry Utilization Specialist); and Mr. Scott Lyon (Wisconsin DNR Forest Products Service Specialist).



The farewell party for Dr. Otsuka and his family at the Goodell home in Blacksburg, with Dr. Goodell's lab group and their families. The party also welcomed and celebrated new additions to the lab, Ms. Liangpeng Zhuang from Northwest F&A University, China, and Mr. Yuan Zhu from Beijing Forestry University also from China.

NEWS FROM GOODELL LAB BY BARRY GOODELL

Farewell to Dr. Otsuka and Welcome to two others: At the end of September 2014, the Goodell lab group bid farewell to Dr. Yuichiro Otsuka and his family. Dr. Otsuka is a visiting scientist from the Forestry and Forest Products Research Institute in Japan and he has worked for the last year on sabbatical leave with Barry Goodell. In that time, Yuichiro has made great progress in finding improved methods for converting waste lignin from kraft and sulphite pulps in useful monomers for bioplastics. Otsuka, in cooperation with Goodell's group

and Dr. Tomonori Sonoki, a visiting Professor on a sabbatical leave with Goodell, and also from Japan, are working with engineered organisms that have the capability to metabolize virtually all of the aromatic compounds from a unrefined fraction of kraft black liquor. This represents a breakthrough in the way that novel platform compounds from lignocellulose residues can be used. The group will continue collaboration with Otsuka in Japan, and have already written a Department of Energy grant to help continue the research. Both Yuichiro

and Tomonori have also contributed greatly to helping students in the lab work on their projects with new ideas and techniques.

In other news from the Goodell lab: Barry spent part of June lecturing and working with students and researchers in Professor Holger Militz's group at Georg August University in Göttingen, Germany; and he thanks Professor

Militz, Dr. Gerhard Buettner, and many others for their hospitality while he was in the beautiful city of Göttingen. This past summer Goodell also traveled to Zvolen, Slovakia, and Sopron, Hungary as part of the Society of Wood Science and Technology meetings; presenting a paper and co-Chairing a session at those meetings with Dr. Alfred Teischinger.



GRADUATE STUDENTS COMPLETION BY BOB SMITH

The following graduate students completed their degree requirements this past year.

- **Mohamadzadeh, Milad.** Advisor – Dr. Dan Hindman. Title: Analysis of Metal Plate Connected Wood Truss Assemblies under Out-of-Plane Loads. MS.
- **Brenes Angulo, Oxana Maria.** Advisor – Dr. Brian Bond. Title: The Impact of Vacuum-Drying on Efficiency of Hardwood Products Manufacturing. MS.
- **Brenes Bastos, Melissa.** Advisor – Dr. Henry Quesada. Title: Assessing Geographic Information Systems (GIS) Use in Marketing Applications: A Case of Study in the Wood Products Industry. MS.
- **Arias Blanco, Edgar.** Advisor – Dr. Henry Quesada. Title: Exports of U.S. Hardwood Products: Increasing Performance in Asia and Western Europe. PhD.
- **Tasooji, Mohammad.** Advisor – Dr. Chip Frazier. Title: Novel Liquid extraction method for detecting Native-wood Formaldehyde. MS.
- **Andersch, Adrienn.** Advisor – Dr. Urs Buehlmann. Title: Lean Implementation and the Role of Lean Accounting in the Transportation Equipment Manufacturing Industry. PhD.



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Continuous
Improvement

SBIO Extension

Extension highlights

The wood products industry in Virginia is a critical contributor to the economy of the state, an industry represented by more than 1,000 primary and secondary industries and over \$25 billion in economic impact.

The Department of Sustainable Biomaterials (SBIO) at Virginia Tech is one of the leading U.S. academic programs in the field of renewable materials with a focus on cellulosic materials such as wood products. Besides research and teaching efforts, SBIO has an important role in dissemination of new knowledge in the area of renewable materials through SBIO's three extension specialists.

SBIO extension specialist offered course in Strategic Marketing for Forest Products Industries

During August 7-8, 2014 Associate Professor and Extension Specialist Dr. Henry Quesada delivered a two-day workshop in Strategic Marketing for Forest Products Industries in Costa Rica. The workshop is part of an-going collaborative effort between Costa Rica Tech and Virginia Tech to provide training opportunities for industries in Costa Rica and neighboring countries.



Workshop participants posed at the end of the event.

The goal of the workshop was to introduce basic marketing aspects to forest products industries through a combination of presentations and individual and group activities. The following topics were covered during the workshop:

- Overview of the global forest products industry
- Strategy in the forest products industries
- Basis of Marketing
- Product definition
- Promotion strategies
- Pricing your product
- Product distribution
- Tools for implementation of marketing strategies
- International marketing for forest products industries

In total, 21 people attended the workshop, including two attendees from Mexico who came just for this event. The workshop was rated by 95% of the participants as excellent.

If you are interested in having a similar workshop for your company, please contact Dr. Henry Quesada at quesada@vt.edu for more details.

SBIO Extension Team participates at the Turman Golf Fall Classic



Left: Brian Bond, Henry Quesada, and Bob Smith posed along with Mr. Mike Turman, Mr. Phil Araman, and Mr. Ryan Turman.

In September 12, 2014 Professors Brian Bond, Bob Smith, and Henry Quesada participated in the annual golf tournament organized by Turman Lumber Co. in Floyd, VA. Mr. Phil Araman from the US Forest Service also joined the group.

The golf tournament takes place once a year at the Great Oaks Country Club with the participation of dozens of eager golf players coming from industry and government organizations. The tournament is one of the main public relation events organized by Turman Lumber Co. to appreciate customers, suppliers, competitors, and other industry stakeholders in working together to improve the forest products industry in the state and the country.

Energy Savings Through Lean Thinking

Content

- Value stream mapping (VSM)
- Incorporation of energy consumption into VSM
- Using energy management systems (EMS) for decision making
- Data mining for decision making
- Energy audits. Integration with lean tools
- Case of study 1: best energy saving recommendations
- Case of study 2: Kaizen groups and impact on energy consumption
- Group activity: Data mining and trend analysis of energy consumption.

Instructor

- Dr. Henry Quesada

Dates and location

- Marion, VA. November 20, 2014

Registration and more details

- Please follow this link <http://sim.sbio.vt.edu/?p=2151>

Vacuum Drying of Hardwood Lumber

While vacuum drying has been available for many years and has been shown to reduce drying times and batch sizes, it has still not been widely adopted by the industry. The goal of this workshop is to provide current information about vacuum drying technology for hardwoods, including how the technology can support the concept of lean manufacturing in secondary manufacturing.

The workshop is scheduled for Friday, December 5, 2014 at the Wood Education & Resource Center, located in Princeton, WV from 1:00 pm to 5:00pm. The workshop will also be conducted in a webinar format for those who wish to participate from a distance. Presentations will be conducted by vacuum kiln suppliers and those currently using the technology in addition to researchers who have recently completed a study looking at feasibility of vacuum drying 4/4 red oak for flooring production.

For more information, please contact, Oxana Brenes, Research Associate, Department of Sustainable Biomaterials, Virginia Tech. e-mail: oxana9@vt.edu, phone number: (540) 239-4407.

International Marketing for Forest Products

Content

- NHLA and the International Hardwood Trade
NHLA, Mark Barford
- Status of the Wood Products Industry
USDA Forest Service, Matt Bumgardner
- Fundamentals of International Marketing
Virginia Tech, Dr. Robert "Bob" Smith
- Marketing Intelligence for Exports
Virginia Tech, Dr. Henry Quesada
- Doing business abroad: Culture and Customer Relationships
AHEC, Mike Snow
- Logistics and Transportation Issues
V. Alexander & Co., Inc, Ben Jabbour
- Financial Support for going global
TBD
- Round Table Discussion
All Speakers

Dates and location

- December 12, 2014. Memphis, TN

Registration and more details

- For registration or more details visit the web page <http://sim.sbio.vt.edu/?p=2198> or contact Dr. Edgar Arias at earias@vt.edu.