



The Department of **SUSTAINABLE DESIGN MATERIALS**



HELLO FROM YOUR DEPARTMENT

BY BOB SMITH

Another semester is almost over and in about two weeks, twenty-five students from the department will walk across the stage at the Moss Arts Center and collect their diplomas. It is always one of the highlights of the year with emotions of great joy, and some sadness for students who will be leaving their Hokie home after four (plus) years of hard work, a challenging education, and hopefully some fun. Many of our students will start new careers in areas such as distribution, research, marketing, design, and production management. Employers began last fall coming to campus to recruit students for positions in the private and public sectors. These employers tell us that the number one challenge for their companies is finding qualified individuals to fill positions that will help lead them into the future. They are not only looking for individuals with good technical knowledge, but students with good communication skills, the ability to take a leadership role early in their career, the ability to work in teams, and to be able to solve complex problems that arise regularly in their companies.

During the past years we have reorganized our classes and curriculum to address the issues that our partners from industry have raised. Our students start working in teams early in their education and many courses require students

to be able to present their work in class. Our student clubs work together to help recruit students, represent the department at national meetings, and organize events on campus to increase the visibility of our department. The department has classes in both packaging and sustainable biomaterials where they must work in teams to solve “real world” issues that come from private companies. The department has capstone courses in which students have to put their education in the department all together to work on a major project for a semester.

This issue highlights some of the work that our student clubs have been doing this past year and recognizes new graduate students to the program. It shares the breadth of our educational program from energy saving methods in producing maple syrup to complex issues with wood based composite manufacturing. The Wood Enterprise Institute (WEI) has had another very successful year with their VT wine rack and the Center for Packaging and Unit Load Design (CPULD) continues to give students first hand experiences working with the packaging industry with a variety of different projects. Finally, our extension faculty continue to serve the commonwealth with a variety of efforts to help the industry better compete in the market.

COVER: 2016 CPULD Sustainable Packaging Design Trainees.

In conclusion, I congratulate all of our graduating seniors and wish them a very successful future. I hope they will remain in contact with us in the years to come. Every day I'm reminded that our purpose as faculty at Virginia Tech is to

help shape the future of our nation/world by assisting in the development of our young adults to go out and make this a better world. This class will have the chance to see if we are doing our job.

STUDENT CLUB UPDATES

THE SOCIETY OF RENEWABLE RESOURCES AT VIRGINIA TECH BY EARL KLINE

The Society of Renewable Resources (SRR) at Virginia Tech is a club for students interested in sustainability through the use of natural and renewable resources. The club's mission is to provide service to the Department of Sustainable Biomaterials and the Virginia Tech community and to foster professional development to better enable tomorrow's work force. Through service and professional development activities, students are able to make better professional and career connections related to the application of sustainable biomaterials, renewable resources and technologies studied in their courses. The club is growing and currently has over 20 active members engaged in their mission. SRR is open to any undergraduate or graduate student attending Virginia Tech. Being active members of the club give many opportunities to lead service activities and help expand

professional networks that build students' resumes.

One major activity over the past year involves learning to master the use of in-house computer manufacturing technologies toward service and fund raising projects. One current project involves using a computer numerical control (CNC) router to rebuild a new entrance sign for



From left to right: Gillian Cubbage, Sarah Blome, Brian Wernecke, Angela Rara, Quillin Gaffey, Dani Rodriguez, Matt Lindsey, Alison Bird, Jon Stutesman.

the Brooks Forest Products Center. Students also play a critical role in the Department of Sustainable Biomaterials' undergraduate recruiting program. SRR students plan and staff many events to showcase majors and career paths in Sustainable Biomaterials. Students in the club host recruitment activities including Gobblerfest, the Virginia Tech Major's Fair, and the Virginia

Tech Science Fair and provide their time to engage with students who want to learn more about majoring in Sustainable Biomaterials. Other club activities include hosting guest speakers from industry, field trips, professional conferences and networking, and fun social gatherings.

PACKAGING CLUB UPDATE

BY TYLER ENGEL

Virginia Tech Packaging Student club has been established since 2010. The club is a member of two different national organizations: a Student Chapter of the Institute of Packaging Professionals (IoPP) and a student chapter of Technical Association of the Pulp and Paper Industry (TAPPI). More than 60 active students are doing collaborative projects every semester such as participation in packaging design competitions, the annual PackExpo and the Packaging Jamboree. Developing a deep and advanced career in packaging is a main goal of the club.

As the semester is nearing an end, we have a few important events we are working towards. We are at the final stages of finalizing materials and a timetable for Shack-a-thon. This weekend, we had our first build day and it was a big success. When our shack is completed, it will be a huge

recruitment asset for Packaging Systems and Design and Sustainable Biomaterials. We hope to educate and recruit more Virginia Tech students to our majors and clubs. One of the things we are focusing on during the week of Shack-a-thon is handing out yogurt. This is important because we can really talk about all the steps necessary to design, create, package, and distribute the yogurt. It will give people an overall view of what our major is and how there are endless opportunities in our industry. We will also be able to communicate about the company who creates the yogurt and expand our student-industry relationships.

As for officer positions, we have held officer interviews already and selected the new officers for the 2017-2018 school year. We have begun the transition from old to new officers and are teaching them the responsibilities of each

position, so they will be ready when the new school year starts. We are planning some social events such as a puzzle room challenge to build teamwork skills, and a fun way for the new officers to communicate in their roles. Lastly, we have our end of the year party celebrating our graduating seniors. There will be fantastic food and a fun way for students and faculty to celebrate a great academic year.

If interested in joining the Packaging Club, we meet bimonthly on Wednesday nights in Cheatham. Students of all majors are welcome to come out and join us. The club focuses on developing the skills necessary to become innovators in the packaging industry and to build off the skills we learn in our classes.

STUDENTS ATTEND PACKAGING JAMBOREE AT R.I.T.

On March 9-11, 13 Hokies, including two faculty, from the Packaging Systems and Design program attended the Packaging Jamboree. PackJam is an event that is held annually at the various Packaging schools on a rotating basis. The meeting provides students with a great opportunity to network with industry members, as well as students in similar majors.

This year, PackJam was held at Rochester Institute of Technology during spring break. The students braved the cold weather, wind storms, and a long drive in order to attend the meeting. While in attendance, the students learned about the current state of the corrugated, plastic, and flexible packaging industries. Additionally, they attended information sessions on the History and Future of

Digital Printing and Designing Products for the Consumer Experience. Perhaps the greatest value of the trip was meeting students from other programs, this gave Virginia Tech students a place to compare education and exchange contact information with students.

The end of the meeting was capped off with a corrugated design competition. The task was to work together with other schools to produce a sustainable chair made from corrugated material. The short time constraint pushed students to hone their design and leadership skills.

NEW GRADUATE STUDENTS

SAILESH ADHIKARI

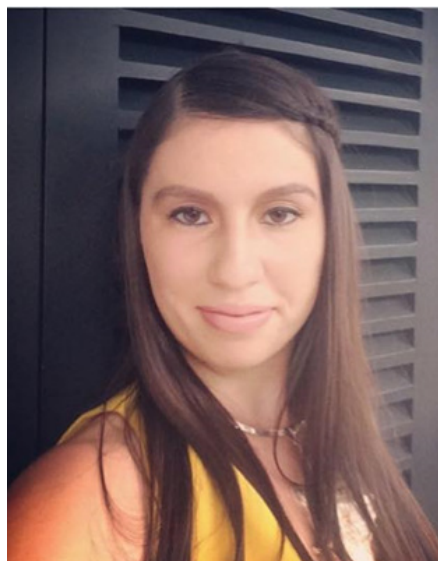
Sailesh Adhikari is a graduate student working towards his Ph.D. under the direction of Dr. Henry Quesada. He has completed a Bachelors in Industrial Engineering from the Institute of Engineering, Thapathali Engineering College in 2010. After that, he worked for Nepal Cylinder in a capacity of Quality Assurance Officer. Later on, he had joined Thapathali Engineering College as an Assistant Lecturer and was also involved partially in another Engineering College. To pursue higher education, he had chosen



Eastern Illinois University and completed an M.S. in Sustainable Energy, M.S. Technology Management and Graduate certificate on the Quality system. He had worked as a summer intern in the capacity of Project Analyst at WWTP-Charleston IL. He is interested in working in the field of renewable energy especially in the field of Bio-fuel. He is also interested in LCA, Lean, Six Sigma, SPC, Continuous Improvements, and Supply chain management. Basically, he is more focused now on business with sustainability.

PAULA FALLAS VALVERDE

Paula graduated in Industrial Engineering from Costa Rica Institute of Technology. She is currently an MS candidate working on Lean Logistic implementation in the Wood Fiber Supply Chain under the direction of Dr. Henry Quesada. Her areas of interest include



Lean Manufacturing, Quality Control, and Continuous Improvement.

Paula's number one hobby is traveling. Since 2011, she has met her target of traveling to at least one foreign location a year and hopefully she will continue to do so.

NILOOFAR YOUSEFI-SHIVYARI



I graduated from the University of Tehran with a B.S in polymer engineering. My interest in biodegradable/natural polymers was the reason I did my M.S. in wood science at University of the Maine. I am currently pursuing a PhD in SBIO under the direction of Dr. Chip Frazier.

My research interests are green polymers, and in general developing more environmentally friendly materials.

My hobbies include hiking, yoga and pencil drawing.

UPCOMING SHORT COURSES

The Center for Packaging and Unit Load Design will be presenting two short courses in the coming weeks. First is the Wood Pallet Design and Performance short course which will be held May 2-4, 2017 at Virginia Tech. Visit [wood pallet](#) for more information.

Second is the Unit Load Design and Performance short course. This will be held at Virginia Tech August 15-17, 2017. To learn more about this short course, click [unit load](#).

Wood-Based Composites Center is presenting the 14th Wood Adhesion Short Course. This course will be conducted August 9-10, 2017 at Oregon State University. Visit [WACS](#) for more details.



STUDENTS FROM ARGENTINA JOIN CLASSROOM DISCUSSION ON SUSTAINABILITY AND SUSTAINABLE BIOMATERIALS

BY TOM HAMMETT

Through the Friends of Fulbright Argentina-Undergraduate Student Exchange Program, a group of students from Argentina spent a month on the Virginia Tech campus. In February Tom Hammett opened up his SBIO 3454 class to the group to discuss society and sustainable biomaterials. Several discussed with our students the differences in perceptions about sustainability between our two countries and the use of wood products. At the end of the visit to Virginia Tech, Tom organized

a tour of the Brooks Center during which Laszlo Horvath showed them the testing work being conducted in the pallet lab, several of our WEI students discussed the processes of project selection, product development, and marketing, and Dan Hindman discussed our work with CLTs and the issues and opportunities for wider adoption of CLTs. Dr. Carol Franco from FREC, and Phil Araman from US Forest Service each joined the class to discuss climate change with our visitors.

YIFAN DONG WINS GLOBAL COMPETITION FOR GRADUATE STUDENT AWARD

Fourth-year graduate student Yifan Dong, pursuing her Ph.D. in chemistry in Dr. Kevin Edgar's group, was presented with the first-place graduate student award for 2017 at the American Chemical Society national meeting in San Francisco, California on April 4. Ms. Dong has carried out pioneering research to develop new ways to convert natural sugar-based polymers (polysaccharides), including cellulose from wood and annual crops, into value-added products to serve society. She has focused particularly on new materials to improve the ability of new drugs that are poorly soluble in water to be absorbed completely into the body, thereby reducing drug cost, side effects, and variance in efficacy, and improving convenience for patients. Her work opens doors to a huge variety of materials made from benign and renewable polysaccharides, imparting new properties of value to advanced applications, and doing so in efficient, fast, cost-effective fashion. Ms. Dong is originally from Yuncheng in Shanxi Province, China, and received her B.S. in Material Chemistry (Polymer) from the Beijing Institute of Technology.



Cellulose and Renewable Materials Division of the American Chemical Society. Students from the Edgar group have now won four times in the past six years; past winners include Dr. Daiqiang Xu, now with Ashland Chemical (2012), Dr. Haoyu Liu, now with AdvanSix (2013), and Dr. Xiangtao Meng, now with Oak Ridge National Lab (2016).

The Graduate Student Award is given annually to only one first place winner and is a global competition; the award is administered by the

MAPLE SYRUP IS FOCUS OF SUSTAINABILITY AND BIOENERGY PROJECT WORK

BY TOM HAMMETT

This semester the learning group projects in Society, Sustainable Biomaterials and Bioenergy (SBIO 3454) will all focus on issues and opportunities in bioenergy for the maple syrup industry. It all started when Tom decided testing small stoves with various types of biofuels would be a good example for his class. The goal is to test the efficiency of a variety of stoves and fuels so that recommendations can be made to small producers in the region.

While maple syrup production is quite small in Virginia when compared to Vermont and New York state, there are several small producers and many feel there is an opportunity for expansion. One of the key challenges for small and new producers is facilitating the boiling sap and fuels. Since the beginning of the project, this work has attracted attention. As a result of this work, Tom has put together a proposal for a grant to develop the industry in the region.

To get a feel for the industry and the opportunities for bioenergy, a class field trip was conducted in late February to Highland County, an isolated and higher altitude area where many of the Virginia producers work. Several of the students attended the annual Highland County Maple Festival during March.

During the course the students design, build and test stoves, learn about a variety of biofuels, and report on their findings. Beyond this first-hand experiential learning, the students will also benefit from the exercise, and will communicate their results through oral and written reports, and articles to be published by the West Virginia Maple Syrup Producers Association.

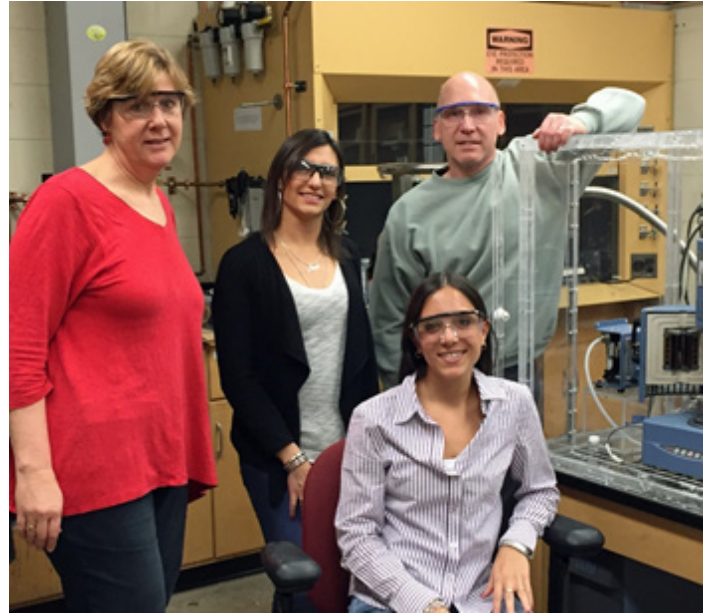
A related opportunity resulted from the February class field trip to Highland County. The department was invited by our hosts to collaborate on a proposal for USDA funding. The funded project will conduct research and outreach designed to seek ways to expand maple syrup production in Virginia.



CHIP FRAZIER'S RESEARCH COLLABORATION WITH THE UNIVERSITY OF AUBURN

BY CHIP FRAZIER

In February 2017, Chip Frazier's research group hosted collaborators from the University of Auburn, at Auburn Alabama. Visiting were Dr. Soledad Peresin and her graduate student, Celeste Iglesias, who is trying to develop new materials from nano-fibrillated wood fiber. Dr. Ann Norris (Sustainable Biomaterials at Virginia Tech) trained Celeste on rheological tools that simply measure the flow properties of the fibers. Peresin and Frazier study how lignin impacts the fiber flow properties, and the properties of mats formed from the fibers.



Standing: Dr. Ann Norris (Virginia Tech), Dr. Soledad Peresin (U. of Auburn), Dr. Chip Frazier (Virginia Tech).
Seated: Celeste Iglesias (U. of Auburn).

TOP 20 BEST PACKAGING PROGRAMS, 2017

(Value Colleges is pleased to report that Virginia Tech has been ranked at number 7 in our ranking of the Top 20 Best Packaging Programs)

#7 Virginia Tech

The CNRE's Department of Sustainable Biomaterials offers a unique BS in Packaging Systems and Design focused on the growing need for environmentally responsible and sustainable packaging systems now and in the future. This exceptional program is built on the

Center of Packaging and Unit Load Design, a specialized research center, and includes strong student support, small classes, and hands-on experience including internships and employment opportunities. With the Virginia Tech reputation, strong industry connections, and a specialized education second to none, graduates can trust their investment.



2016-2017 WEI team (L-R): Devin Lee, Peter Paschina, Kyle Young, Haemi Lee, Daniel Quattrone, Esther Brenig, Anna Lac-samana, Carter Tignor, Adam Kight, Erik Marschall, Brittney Hargrove, Leila Husain, Phillip Thomas, Ian Miller, Jack Kelly, Steven Morrisette, Alex Keith, Jon Stutesman, Sarah Ahart, Jacob Zalewski, and Seth Carlton.

WOOD ENTERPRISE INSTITUTE BY EARL KLINE

This year marks the 10th anniversary of the Wood Enterprise Institute (WEI). Once again, this year's team of students are busy working together to overcome challenges in their business to create, build and deliver unique wood products. This year, the WEI team is carrying out a business plan to make and sell a uniquely designed Virginia Tech wine rack to Alumni, family and friends. This innovative product was promoted so well that the number of wine racks the team planned to make sold out in a matter of minutes when they opened up their online store!

The students get real-world business experience through challenging projects like the Virginia Tech wine rack. The intense learning happens now during the spring semester when the team works to address the many challenges that will get in the way of the plan. Students take ownership of their learning experience by acquiring appropriate knowledge and expertise and applying them towards the challenges they face. The success of their project depends on a group of students coming together as a team and applying each student's unique abilities and skills for the collective good of the business.

This year's team was the largest group ever — with 21 team members. Students from many disciplines in building construction, industrial design, engineering, and business work together with students in the Department of Sustainable Biomaterials to continue the success of the learning experience. The innovation and design laboratory housed at the Thomas M. Brooks Forest

Products Center, the place where students build and prove their design concepts, provides safe, business standard, and state-of-the-art equipment and facilities. Many thanks and much appreciation go to the donors who support WEI to ensure this kind of learning experience can be sustained.



THE 2016-17 WOOD ENTERPRISE INSTITUTE HANDMADE WINE RACK. By incorporating the VT logo directly into the design of the rack, the team has created a strong connection between the product and the Hokie nation.



The WEI team explains the challenges they had to overcome in perfecting the Virginia Tech wine rack to Dr. Paul Winistorfer, Dean of the College of Natural Resources and Environment and Dr. Bob Smith, Dept. Head.

HAMMETT NAMED VISITING PROFESSOR AT THE AGRICULTURAL AND FORESTRY UNIVERSITY IN NEPAL

BY TOM HAMMETT



The recently established Agriculture and Forestry University (AFU) is the first land-grant institution in Nepal. AFU has just named Tom Hammett as Visiting

research groups and study abroad courses there. His most recent project was to help found and mentor Virginia Tech's Service Without Borders (SWB) and lead a SWB service learning trip during the summer of 2016 to Nepal to conduct reconstruction work after the earthquakes of 2015. This new position should open up new collaborative research and teaching opportunities for Virginia Tech in a variety of disciplines.

Professor beginning in March 2017. After his nomination, Hammett completed the year-long review and approval process in the fall of 2016 and the decision was announced in late February. His roles will include guiding graduate students, advising faculty on teaching and learning, and developing collaborative research programs. Currently research and development goals for this collaboration with AFU are to develop ways to produce and use cross laminated timbers (CLTs) in earthquake recovery, and developing research protocols for sustainable production of non-timber forest products. During the past several years, Tom has been involved in several projects in Nepal and the region, leading faculty

Come celebrate CNRE's

25th anniversary,

Sept. 15-16, 2017!

CNRE



COLLABORATION BETWEEN NWPCA AND VIRGINIA TECH

BY LASZLO HORVATH

National Wooden Pallet and Container Association (NWPCA) and Virginia Tech are working together to move the pallet industry into the 21st Century. NWPCA became one of the Gold level members of the Center for Packaging and Unit Load Design (CPULD) in 2015 and established the NWPCA Research Fellowship program in which graduate students are supported to investigate the interaction between packages and pallets and to conduct research that helps the pallet industry be more sustainable. Page Clayton was the first student supported by the program. Page graduated from Virginia Tech's Packaging Systems and Design program in May 2015. During his time at Virginia Tech, Page was extensively involved in the packaging program, he participated in the Sustainable Packaging Designer Trainee program offered by CPULD, worked as a laboratory technician for the Center for two years, and was actively involved in the Packaging Club. After graduation, Page continued to work for the Center and used the skills that he learned during his undergraduate studies to help packaging companies design safer and more sustainable packaging solutions.

Page started his graduate studies in January 2016. His research focuses on the investigation of the compression stress distribution between corrugated boxes and wooden pallets. This

year, he was invited to present the preliminary findings of his work at NWPCA's 2017 Annual Leadership Meeting in Tucson, AZ (Figure 1).



Figure 1 Page Clayton is presenting in NWPCA's 2017 ALC meeting. Example distribution of compression stresses on a wooden pallet.

In 2016 August, NWPCA in collaboration with the US Forest Service, supported another graduate student (Nathan Gerber) whose research focuses on gathering information on the status of the wooden pallet industry. Virginia Tech has

been surveying the pallet industry since 1995. As part of the project, Nathan worked collaboratively with the Science and Technology Committee of NWPCA to make sure that the survey covers all important aspects of the pallet industry. The survey will be sent out in May, 2017 both in a paper and electronic format to improve participation from the industry.

In addition to providing support for graduate students, NWPCA also offers scholarships to packaging students. In 2015, four undergraduate students (William Bagby (Senior), Landon Holbert (Senior), Teddy Polk (Senior), and Bradley Sisson (Graduated in 2016) received the NWPCA scholarship. The students also had a chance to participate in an undergraduate research project sponsored by NWPCA. The students investigated the effect of pallet gaps and package overhang on the distribution of compression stresses under the corrugated box. The students had a chance to travel to

Orlando, FL and present their research findings during NWPCA's 2016 Annual Leadership Meeting (Figure 2). This year, another four students (Michelle Lipka (Junior), Leah Johnson (Junior), Hunter Houston (Senior), and Chandler Quesenberry (Junior)) had a chance to work on an undergraduate research project sponsored by NWPCA. Hunter Houston (Senior) was invited to represent the group in NWPCA's 2017 Annual Leadership Meeting (Figure 3).



Figure 2 Teddy Polk, Landon Holbert, William Bagby, and Bradley Sisson after their presentation at NWPCA's ALC Meeting in Orlando, FL. John McLeod of NWPCA is on the far left, and Dr. Laszlo Horvath is on the far right.



Figure 3 From left to right, Hunter Houston, Dr. Laszlo Horvath, and Page Clayton at NWPCA's 2017 ALC meeting.

SUSTAINABLE PACKAGING DESIGNER TRAINEE PROGRAM

BY LASZLO HORVATH

The Sustainable Packaging Designer Trainee program was established in 2012 by the Center for Packaging and Unit Load Design (CPULD). Since then, the program has become a great success. Students graduating from the program receive job offers as early as a year before graduation at companies such as Niagara Bottling, Rehrig Pacific, Newell RubberMaid, Sam's Club, Manhattan Associates, and Grupo Phoenix.

The internship/training program is one of the most extensive extracurricular training programs offered at Virginia Tech. Interested students apply for the program early in the academic year and go through multiple interviews. Students are brought in to the program based on a number of factors, including GPA and prior experience, however attitude and enthusiasm are also valued highly. The program officially starts around mid-May with a three-day off-site team building training event where the students not only come together as a team through fun activities and meals together, but they also learn the basics of wood identification, testing standards, and wood mechanics. Following the team building training, they work a full 40-hour workweek schedule during the summer in the Center's testing lab where they work as an Undergraduate Laboratory Technician on industry contract testing

projects. During the summer, the students also learn more extensively about relevant loading conditions that affect the supply chain, such as compression, shock, vibration, and atmospheric conditions. By the end of the summer, each will have taken and passed the ISTA® Certified Laboratory Packaging Professional Exam, and will have earned a well-respected industry certification.

Following the summer, in addition to their regular academic schedule, the students are required to work a minimum of eight hours per week as a laboratory technician and take two three-credit courses called Sustainable Packaging Design and Innovation I-II. During the course sequence, the students learn relevant industry skills such as report writing, professional presentations, packaging testing, project management, principles of Lean Management, and the development of standard operating procedures. In addition, they conduct an undergraduate research project for the fall semester and an industry project sponsored by a packaging company during the spring.

As an example, in 2016, our students worked on approximately 110 commercial testing projects, completed a research project sponsored by the National Wooden Pallet and Container Association (NWPCA), and completed a packaging redesign for an electric stator for Moog Motion Technologies. The research project conducted by the students was of such a quality that NWPCA invited them to their Annual

Leadership meeting in Orlando to present the results to their membership. The students did an amazing job during the presentation.

In addition to the extraordinary effort that these students spend in the program they also had time for some fun. Below is a collage of some fun pictures from events over the last three years.



Continuous Improvement

In addition to the industry projects the students actively apply the principles of Lean Management in the laboratory. This year we had two focused improvement events (Kaizen) for three of our offices. The students learned to apply 5S principles and develop an automated replenishment system (Kanban) for the storage room in the lab.



Results of the 5S event conducted in one of our storage rooms.

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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 professors team up with architect and builder contractor to discuss the status and development of cross-laminated timber in Costa Rica



Figure 1. Cross-laminated timber panels produced and tested by Dr. Dan Hindman

Associate professors Dan Hindman and Henry Quesada will be traveling to Costa Rica along with Architect Tom Chung and Builder Contractor Charles Judd to present on the status and new development of cross-laminated timber (CLT). The international symposium is co-sponsored by VA Tech and Costa Rica Tech in an effort to present this new-engineered material to architects, civil engineers, and to the local forest products industry in Latin America.

The event will take place on **April 20, 2017** at the San Jose Campus of Costa Rica Tech. The registration for the event was closed only a week after opening and it was limited to 100 participants. The speakers will also be visiting and inspecting two social housing projects in the Atlantic region of Costa Rica. The housing units in these projects are still under construction and southern yellow pine from the U.S. is the main construction material.

SBIO extension professors work with members of the Wood Research Supply Institute to implement value-streamed mapping techniques

Professor Brian Bond and Associate Professor Henry Quesada, extension specialists at the Department of Sustainable Biomaterials, are partnering with members of the Wood Supply Research Institute (WSRI) to apply value-streamed mapping (VSM) techniques to their wood fiber supply chain.

VSM is a visual technique that helps to identify waste by mapping the flow of materials and information of a manufacturing or service process. The goal of this project is to conduct at least three case studies to implement a VSM tool developed at VA Tech that combines lean, logistic and life cycle assessment (LCA) principles. Members of the WSRI are mainly



companies that harvest, transport, and supply wood fiber to industries such as paper mills, softwood and hardwood sawmills, and pellet mills.

MS student Paula Fallas is the person responsible for the implementation of the VSM tool under the direction of Drs. Bond and Quesada.



Virginia Tech partners with Purdue University to deliver two workshops in Indiana



Figure 2. Associate professors Quesada and Haviarova (left, front row) posed with employees and strategic partners of Purposeful Design at their wood shop

On April 1 and April 3, Associate Professor Henry Quesada from the Department of Sustainable Biomaterials at Virginia Tech partnered with Associate Professor Eva Haviarova from Purdue University to deliver two workshops in the state of Indiana.

The first workshop was delivered to employees and partners of the project **Purposeful Design** in Indianapolis, IN on April 1 on the topic of Wood Identification. This organization “*employs and trains men who have been without a home or who have found it difficult to get a job – helping rebuild lives while teaching the craft of woodworking through positive and encouraging*

mentorship” (<https://pdindy.com>). A total of 18 people attended the workshop that included not only theoretical concepts but a full hands-on session on how to separate and identify the main hardwood and softwood species produced or used in the Midwest.

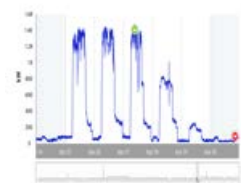
The second workshop was delivered on April 3 at the Vincennes University campus in Jasper, IN. Attendees came from the various office and kitchen cabinet industries such as Masterbrand and Jasper group. Also in the group were representatives of the Indiana’s governor office and a financial institution. The workshop presented information on the latest trends for household and office furniture as well as recent research on the potential of exporting US furniture to Latin America. Also, the participants were updated on the current status of the industry in Indiana. A Purdue MS student provided a cultural presentation by playing a Chinese violin.

If you or your organization are interested in conducting similar events, please contact Dr. Quesada at quesada@vt.edu.

SBIO extension specialist Quesada supports USAID funded project to improve capacity of vocational and training education on Agriculture and Natural Resources

From **April 25 to April 28 2017** participants from Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and the United States will be meeting at EARTH University campus in Guacimo, Costa Rica to discuss the future of vocational training and technical education of agricultural and natural resources programs in Central America.

The event is sponsored by the US Agency for International Development (USAID) through the Virginia Tech led-project InnovATE. The InnovATE project “*works to achieve sustainable food security, reduce poverty, promote rural innovation and stimulate*





employment by building human and institutional capacity. The program focuses on all aspects of agricultural training and education including: youth, gender, and workforce development, at the primary, vocational/technical, university and post-graduate levels”

The workshop is led by Henry Quesada from the Department of Sustainable Biomaterials with the support of John Ignosh extension specialist in the Department of Biosystems Engineering and Johanna Cricenti with the Office for International Research, Education and Development (OIREd) also at Virginia Tech. More than 35 participants have confirmed attendance including teachers, school directors, government representatives, and international non-profit organizations for each Central American country and the U.S.



Upcoming events

North American Wholesale Lumber Association (NAWLA) Wood Basic 101 course is coming to Virginia Tech

The NAWLA Wood Basics Course was started in 1981 to educate and develop a skilled workforce for the forest products industry. More than 1,500 professionals have graduated from the course since its inception, representing a broad cross section of the industry. Since that time, the curriculum has evolved with the industry, in areas such as technology and global trade. Today, the Wood Basics Course provides companies the best value and option to ensure its employees have the tools and knowledge to help them succeed.

The Summer of 2017 of Wood Basics 101 will be held at Virginia Tech from July 17 to July 20. For more information including registration please visit:

<http://www.nawla.org/page/Wood-Basics>

Virginia Forest Products Association (VFPA) Convention: New Developments and Impact of Cross-laminated timber (CLT) in the wood products industry

The bi-annual convention of the Virginia Forest Products Association (VFPA) is scheduled for **September 8-9, 2017 in Norfolk, VA**. For updates and information on registration please go to the VFPA web site at <http://www.vfpa.net/Events.html>



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