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# NABLE MATERIALS

WELCOME OUR NEW  
GRAD STUDENTS

STUDENTS'  
EXPERIENCES  
FROM  
INTERNSHIPS

STUDENTS RECEIVE  
AWARDS AND  
SCHOLARSHIPS  
MORE

# DEPARTMENT HEAD MESSAGE

BY BOB SMITH

The students are back, the nights are getting cooler, and Hokie football is in the air. The week before classes start is always an exciting time on campus. The students with their parents invade Blacksburg with enthusiasm and dreams of making the dean's list. Our department welcomes back all of our students and we wish you a great year.

Our department continues to grow with over 100 students for the fall semester. Both our SBio and Packaging programs saw student enrollment increase for the fall. We graduated 26 students in the spring of 2015, with most of them finding jobs or going on to graduate school. This is the most asked question we get from students and parents entering our programs. "What type of jobs do students get with our degrees and are their jobs?" The answer to the second question is YES. It helps considerably if a student had an internship during his/her time here. We have employers who will start looking at students as early as January for summer internships or full-time employment. The type of job is a little more difficult to say, since it depends on the area the student focused upon during their time with us. Traditionally in the SBio area, students found placement within the natural resource based industries as entry level managers, technicians, laboratory specialists, marketing/sales personnel, or in quality control. In our packaging programs students find employment in

product development, supply chain management, quality assurance and design. There are many other opportunities for careers for students after graduation. Students should please visit with their advisors or other faculty to get a good idea of career paths.

Our department held its annual retreat this summer to identify areas where we can improve programs for our students. We spent the day reviewing our course offerings, conducting exercises on sustainability aspects in our classes, and student recruitment. Our department continues to work very hard on increasing the awareness of our programs to students on and off campus. The college has hired a new recruiter this summer and we will work closely with him to bring our message to high school students that there are great career opportunities studying the science of sustainable biomaterials. Our discipline applies Science, Technology, Engineering and Business to the nation's most abundant, renewable natural resources. And while doing this, students can make decisions that impact the sustainability of these resources and improve our environment.

We welcome everyone back for fall semester and wish you success in your studies. If you have any questions regarding our programs, please contact me at [rsmith4@vt.edu](mailto:rsmith4@vt.edu) or stop in room 230 Cheatham Hall.

# LEARNING FROM INDUSTRIAL PACKAGING INTERNSHIP PROGRAM

Over several years, packaging students have learned industrial experience through co-op or internship programs at packaging industries. During this past summer, the majority of packaging students (junior and senior) have successfully finished their internships at many companies and states beyond Virginia and came back to school with brilliant achievements and successful stories.

## LEARNING CORRUGATED PACKAGING OVER THE SUMMER

BY VINA LE

This summer, I had the pleasure of working with Packaging Corporation of America in Roanoke, Virginia. The experience was beneficial, and I never thought I would gather so much imperative material about the corrugated board industry. It was a fascinating learning process as I got to work with my supervisors in many segments of the company's system. My goal this summer was to learn the foundation of a packaging industry, so the corrugated board industry helped me understand that it is important to learn that processes influence designs. Without knowledge of how systems work in an operation, designs will not be correctly produced. My experience in PCA consisted of various responsibilities and

experience including customer service, design, management, plant operations, and sales and accounting.

My plan, for my career, is to one day combine my interests in design and plant operations with networking amongst customers and employees. Alongside with that idea, I would like to focus my packaging developments in a cosmetic industry. Learning about the corrugated industry was extremely helpful with jump-starting my career, and I hope it continues to help me gain more opportunities to network and gain connections that will further develop my skills set. I learned that the quality of relationships depend on how efficient and reliable people are. For example, in sales, many of the salespeople working for PCA are highly dependent on communicating well with their current and prospective customers. Making sure that the customer understands their options and

COVER: Virginia Tech Hokie Bird was created with 123D Make Autodesk Inventor program. Vina Le sliced the 3D structure of the Hokie Bird into 350+ horizontal slices. It stands roughly 40 inches.

promoting their sales is important for the company because they are directly communicating to their customers. I learned that salespeople have an important role in Packaging Corporation of America's sales segment.

Money is a driving force for many companies like PCA, and it's important to organize that money and report in a fashion that concisely represents how much corrugated boxes are being produced, how much utility was used, what were costs of a returned product, and

## WORKING AT BRAND OWNERS!

BY RICHARD TREY GOOD

This summer I got the pleasure of working for Newell Rubbermaid in Charlotte, North Carolina. More specifically, I worked as a packaging engineering intern on the merchandising team. It was one of the best experiences that an intern could ask for. I was given a project that was actually valued by the company and could eventually make a huge impact for the packaging team. My project was to review all of our display portfolio across the four main business segments, group them into "families" based on the most modular component, format this playbook into a way that is useful for the cross-functional team, and import it into our online spec system. Through this project, I was able to develop skills such as driving for results, collaboration, leading cross-functional

how can we fix certain quality issues that many corrugated box converters deal with? I learned how my previous experience with deterministic operations research can be applied to situations like this, and it was interesting to see how it worked in a large-scale industry. Applying VBA coding and the Microsoft Access program really helped me understand how the distribution of packaging works. Overall, I am satisfied with the experience and I hope to continue my work ethic in this company for the time being.



Trey with his cousins in front of his office at Rubbermaid. teams, and how to problem-solve more effectively. At the end of the summer, I was required

to give two presentations. The first one was in front of anyone who wanted to attend and it was considered our “technical” presentation. The presentation lasted 25 minutes with 10 minutes of questions at the end. The second presentation was for the VP of Research and Development and all of his direct reports. It was only for five minutes with five minutes of questions at the end. This was something that I have never done before and was actually harder than the longer presentation. This was due to there being so much work I had done over the summer. I had to compile all of that information while still being informative enough for one of the Vice Presidents of the company. I passed both though and received very valuable feedback from my manager on what I did well over the course of the summer.

Aside from just the requirements for the internship, I was able to make lots of connections. I got to know a lot of different people from packaging, engineering, marketing, and sales. It allowed me to gain a whole new perspective on how these different functions work with one another. This is a skill set that I will be able to take with me no matter what company I go work for. Additionally, I was able to meet different interns from all different kind of universities with different interests in life. I made really good lasting connections that will last me a lifetime. It was also really helpful to have them to turn to when I have questions, and it gave me a good friend group to hang out with in an area that was just as new to me as it was

them. Luckily at the conclusion of my internship, I received a job offer to be one of their associate packaging engineers after I graduate.

It was a great honor to receive this offer so quickly, and I am anxiously awaiting my official letter from the Human Resources department. I will most likely accept this offer of employment just because of my very positive experience over the internship, the culture of the company, and willingness to better their employees. Also, I think there drive to better their employees aligns with my future goals for my career. My future goals will be to go to the industry and work for a Consumer Packaged Goods (CPG) company then pursue an MBA in order to hopefully move up in an organization. While it is sad that I am starting my last year at Virginia Tech, I am excited and optimistic for what the future will hold for me. I plan to finish strong and hopefully leave my mark on a university that has opened the door to so many opportunities.

# WELCOME OUR NEW GRADUATE STUDENTS



**Christa Stables** is a first year Master's Degree Candidate working with Dr. Frazier, studying the wetting and diffusion of various liquid-wood interfaces. Her undergraduate degree was

also in Sustainable Biomaterials at Virginia Tech, with a minor in Chemistry. She is recently married, and is looking forward to sharing this experience with her new husband. She would ultimately like to work out in the field, in a mill environment, while doing work with adhesives as well.



**S a m a n t h a Phanthanousy** graduated from Virginia Tech this past May and received a Bachelors in Packaging Systems and Design. She participated in two undergraduate research

symposiums and spent one summer assisting a doctorate student with his dissertation. Samantha also worked as a lab technician in the Center for Packaging and Unit Load Design at Virginia Tech. As a Master's Degree Candidate working with Dr. Horvath, Samantha's research interest focuses on the interaction between

pallets and packages. The interaction is observed by how different design factors of the pallets and packages can impact each other. When Samantha is not working on research, she enjoys going hiking and playing soccer. She also loves to cook and just enjoys the company of her friends.



**Christian Birkett** is a dual MS candidate from southwestern Virginia, studying in SBIO and Industrial & Systems Engineering. He is working under Dr. Goodell and is researching the future

supply chain for nanocellulose products. He did his undergraduate work here at VT in the Materials Science and Engineering program.



**Eduardo Molina** came from Costa Rica, where he obtained a B.S degree in Industrial Production Engineering from the Costa Rican Institute of Technology. In the final year of college, he

began working for Kimberly-Clark Corporation as an intern in the area of Operations Research and Analytics, specifically focusing

on optimization of the production scheduling. After graduation, Eduardo stayed working there as a Planning Analyst for Finished Goods for the region of Central America and the Caribbean. He worked in this role for three years, where he was responsible of the distribution requirement planning and the supply planning for multiple distribution centers in different countries. As a Master's Degree Candidate working with Dr. Horvath, Eduardo's research interests lie in the area of continuous improvement and

optimization of the whole supply and distribution chain, involving areas from inventory planning to the optimization of the unit loads in the logistics operations, in order to streamline the distribution network and provide continuously better and more profitable results. On the personal side, Eduardo enjoys watching soccer games (especially the ones from Cartago, a great team!) as well as traveling to meet new people and cultures.



## SUSTAINABLE PACKAGING DESIGN TRAINEE PROGRAM OFFERED BY THE CENTER FOR PACKAGING AND UNIT LOAD DESIGN

BY LASZLO HORVATH

Every year, 4 outstanding undergraduate students are selected from Virginia Tech Packaging Systems and Design program to participate in the Sustainable Packaging Designer Trainee program offered by the Center for Packaging and Unit Load Design. In 2015, William Bagby (Junior), Teddy Polk (Senior), Landon Holbert (Sophomore), and Bradely Sisson (Senior) were selected. As part of the trainee program the students spent the whole summer in Blacksburg learning about pallet, packaging and unit load testing. The summer training started with a four-day extensive off-site training program in Georgia. During the training the students learned about the principles of lean



Landon Holbert (Sophomore) and Bradley Sisson (Senior) are learning about Standard Operating Procedures through a LEGO® car building exercise.

manufacturing, the importance of standards, practiced pallet testing procedures, and also participated in team building exercises.

Following the four-day training, the students learned ISO, ASTM, and TAPPI pallet and packaging testing procedures and became Certified Laboratory Technicians by the International Safe Transit Association (ISTA). In addition to the training, the students had a chance to work on real life industrial testing projects with regional and multinational companies such as Corning, Tvilum, Homestar, LogisAll, Altria and others.

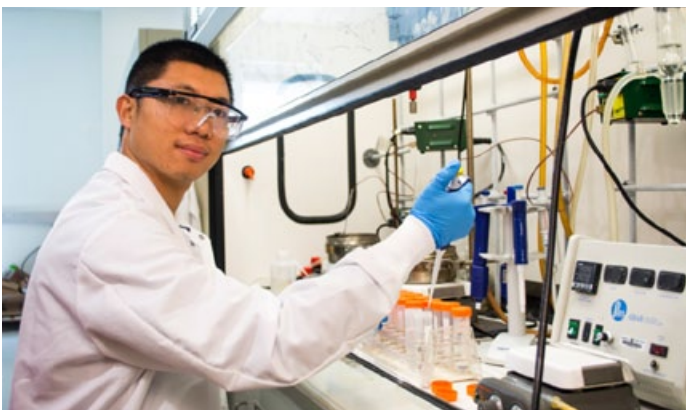


Although the students accomplished a lot, their journey is just starting. During the fall semester, they will work on a project sponsored by the National Wooden Pallet and Container Association and present the findings of the research in their Annual Leadership Meeting in the spring.



## SBIO/MACR STUDENT WINS PRESTIGIOUS ACS AWARD

BY KEVIN EDGAR



Xiangtao Meng, a fourth-year graduate student in the College of Natural Resources and Environment, has recently been announced as the winner of the 2015 Eastman

Graduate Student Award, given annually by the American Chemical Society's Cellulose and Renewable Materials Division. The competitive award is given to only one student annually (along with a second place award) from among an international pool of applicants, and recognizes outstanding graduate student achievement in cellulose and renewable materials research. Xiangtao was recognized for his work in devising a new, versatile, and efficient way to modify the renewable polysaccharide cellulose, opening up applications for novel



derivatives of the abundant natural polymer ranging from batteries to drug delivery. Meng's new methodology is so mild that it can be carried out at room temperature and is often complete within one hour, involving no strong acid or base catalysts, and thereby enabling attachment of entities to cellulose (e.g. targeting or therapeutic groups) that are extremely sensitive and would be difficult to attach in any other way. Xiangtao is pursuing his Ph.D. in Macromolecular Science and Engineering (MACR), with a Doctoral Fellowship from the VT Institute for Critical Technology and Applied Science (ICTAS), working under the guidance of SBIO Professor Kevin Edgar.

Meng's method will allow chemists to use a single readily available, sustainable biomaterial to develop a wide variety of polymers specifically tuned to carry many different pharmaceutical targets.

Meng compares the process to grafting fruit trees: the spectrum of different polymers available is like "harvesting apples this year, peaches next year, and pears the next year — all from the same tree," he said. Meng, from Shandong Province, China, is now working on incorporating another type of chemical reaction that will allow even more versatility — like "growing apples and peaches on the same tree," he said. It will also open the door to a wider array of potential applications, like the synthesis of antibacterial hydrogels for wound dressing.

This is the third time within the last four years that a graduate student from the Edgar group has been honored with this prestigious international award (Daiqiang Xu in 2012, and Haoyu Liu in 2013).



## PACKAGING STUDENTS ENGAGE WITH LOCAL INDUSTRY BY JOHN BOULDING

The Center for Packaging and Unit Load Design (CPULD) is an integral part of the Packaging Systems and Design major and the Department of Sustainable Biomaterials at Virginia Tech. The CPULD laboratory conducts packaging and unit load testing and simulations for industrial

clients from around the world. Undergraduate student interns are the main driving force behind our daily operations. Under the leadership of faculty and graduate students, these interns not only learn testing and research skills but also earn the Certified Packaging



Corning plant, Christiansburg, Virginia. From left, Matthew Baker (Ph.D. candidate), interns Landon Holbert, Bradley Sisson, Teddy Polk, and William Bagby; Samantha Phanthanousy (Master's student), Laszlo Horvath, John Bouldin, and Tyler Matusevich (Master's student).

Laboratory Professional designation from the International Safe Transit Association. Most interns go on to participate in industry internships before graduation. These skills and accomplishments help them to successfully compete in and contribute to the future of the packaging industry. This year's interns are Landon Holbert, Bradley Sisson, Teddy Polk, and William Bagby.

One of the goals adopted by CPULD is to meet with local businesses to enhance awareness of our program, establish working relationships, and to encourage the hiring of our students for internships and full-time employment. During the months of July and August, students and faculty were invited to visit two

firms in Christiansburg; the Corning Plant on North Franklin St. (hosted by Mr. Wes Jarrell), and Hubbell Lighting on Electric Way (hosted by Mr. Rick Mayer). We are grateful to these companies for treating our group to presentations on their company histories and product offerings, and tours of their facilities including manufacturing, warehousing, packaging, and distribution operations.

These opportunities enabled our students to observe first-hand how the concepts learned in the classroom are actually applied in the field. In addition, students could observe how the packaging and distribution tests conducted in the lab relate to the conditions experienced by packages and unit loads in the real world.



SBIO tent at Gobblerfest

## FIRST INFORMATION SESSION WAS A HIT!

BY MEGAN STALLINGS, SENIOR, PACKAGING

The SBIO and Packaging student recruiting teams under the guidance of SBIO EMC concluded the first portion of the fall new student recruitment with a joint interest session for the sustainable biomaterials and packaging programs. They held a cookout and attended Gobblerfest during the previous week where they were able to reach out to students and advertise the interest session.

It was a big hit among primarily freshman students. There were about 15 students in attendance. The interests of students ranged from “I don’t know” to double major in architecture and sustainable biomaterials.

Catherine Jucha, president of the Society of Renewable Resources club, spoke on behalf of the sustainable biomaterials programs

and opportunities. Megan Stallings, Senior in Packaging, spoke on behalf of the packaging program, club, and opportunities after graduation.

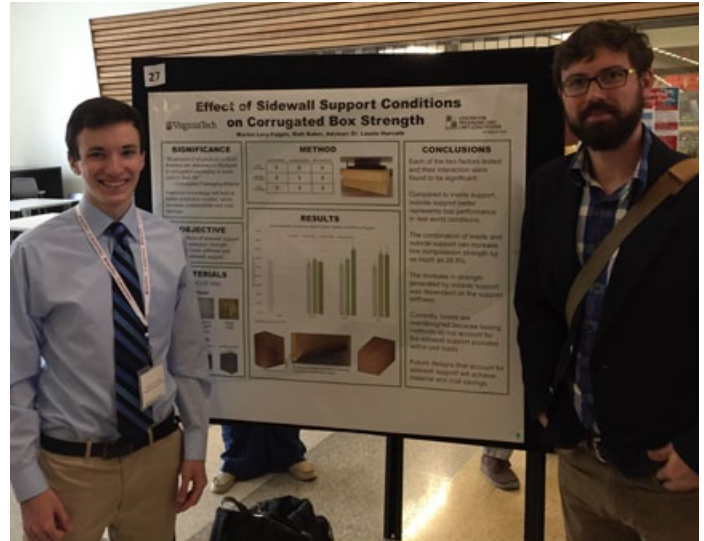
The students seemed very interested in sustainability and eager to learn more about the programs. The hands-on learning opportunities that the program offers truly appeal to students.

Interest sessions such as this give students not only an opportunity to learn more about the Department of Sustainable Biomaterials, but they provide a time to network and build lasting relationships. Both sustainable biomaterials and packaging will be organizing interest sessions later in the semester.

# UNDERGRAD SUMMER RESEARCH AT THE CENTER FOR PACKAGING AND UNIT LOAD DESIGN

BY LASZLO HORVATH

During the summer, Matt Baker (Ph.D) and Marlon Levy-Faigen (Junior) have been tackling one of the biggest challenges in the packaging industry. They have been investigating how the compression strength of corrugated boxes change depending on the content of the box. The research will help us design more efficient corrugated boxes and improve the sustainability of the overall industry. Mr. Baker and Mr. Levy-Faigen presented their finding in the 2015 summer Undergraduate Research Symposium at Virginia Tech.



Poster presentation on the 2015 Summer undergraduate Research Symposium. Marlon Levy-Faigen, left and Matthew Baker

## ASPECTS OF WOOD BIODETERIORATION AND BIOCONVERSION

BY BARRY GOODELL

The Université de Lorraine and the Institut National de la Recherche Agronomique (INRA) hosted Professor Barry Goodell for several weeks in May and June of this year. Goodell gave seminars on several aspects of wood biodeterioration and bioconversion, Goodell met with faculty, staff and students to discuss collaborative research and student exchange activities. In addition to meetings and lectures in both Nancy (ULorraine) and Ecologie et Ecophysiologie Forestières in Champenoux,



Professor Barry Goodell holds a bicycle made from bamboo by students at École Nationale Supérieure des Technologies et Industries du Bois in Épinal, Cedex, France. Behind him are several other student projects made using hybrid composite materials, but featuring lignocellulose as the core material.

France, Goodell also travelled to the École Nationale Supérieure des Technologies et Industries du Bois in Épinal Cedex, France to give a seminar, and was kindly hosted on that visit by Professor Philippe Gérardin of ULorraine. As part of the visit, Goodell traveled to meet with Professor Christophe Bertsch, Directeur, Laboratoire Vigne Biotechnologies et Environnement at the Université de Haute-Alsace in Colmar, France to give a presentation, and learn about a devastating fungal decay

disease of grape vine stock in France that now kills as much as 30% of the vine stock each year.

Professor Goodell is indebted to Professor Dr. Eric Gelhaye, Université de Lorraine and INRA, and his unit Interactions Arbres/Micro-Organismes for an excellent experience in Nancy, Champenoux and the surrounding area, and for organizing and sponsoring Goodell's travel to France as a visiting Professor.



## EDGAR SERVES ON INTERNATIONAL PhD COMMITTEE

BY KEVIN EDGAR

Prof. Kevin Edgar recently returned from Barcelona, Spain where he served on the PhD final orals committee for a former visiting scholar in his group, Victoria Codera. Victoria spent approximately 6 months in the Edgar group during 2013-2014 studying combining chemical and enzymatic methods for preparing polysaccharides in which the sequence of the monosaccharide building blocks is precisely specified. Not only is this an extremely difficult problem in the construction of complex, renewable polysaccharides like those from nature, but it is virtually impossible to do even in the preparation of synthetic polymers.

The work resulting from this collaboration between the Edgar group and that of Professor Antoni Planas, of the Institute of Chemical



Professors Antoni Planas, left, and Kevin Edgar.

Sciences (IQS) in Barcelona, was largely carried out by (now Dr.) Codera in both Blacksburg and Barcelona, and is the subject of a current manuscript submission. Edgar also delivered a lecture on current work in his group to faculty and students at IQS in Barcelona, entitled "Selectivity in Polysaccharide Chemistry: Regio- and Chemoselective Preparation of Bioactive Polysaccharide Derivatives."



Participants in the Lean Management training develop a Value Stream Map as part of the activities of this short course

## QUESADA DELIVERS LEAN MANAGEMENT INDUSTRY TRAINING IN DOMINICAN REPUBLIC

BY HENRY QUESADA

From June 25-26, 2015; Dr. Henry Quesada, Associate professor at the Department of Sustainable Biomaterials taught a short course on Lean Management. The short course was organized by a local organization called INTRAS that provides training to companies in Dominican Republic in business and operation management topics.

This is the third time Dr. Quesada has traveled to this country to teach this short course. In this opportunity, a total of 34 people attended the two-day short course from financial, logistics, and manufacturing industry sectors. The short-course has mostly based on hands-on

activities where participants designed and performed various simulation activities to capture and analyzed process data. This approach was fundamental to help participants to understand the impact of the different productivity tools under the umbrella of Lean Management.

Dr. Quesada has been involved in Lean Management research and training since 1998. He has trained thousands of people on the topic in the USA and other countries. If your organization is interested in conducting a similar training for your associates, please contact Dr. Henry Quesada at [quesada@vt.edu](mailto:quesada@vt.edu) for more details. We will be happy to assist you.



Entrepreneurial Scholarship recipients (left to right): Dayna Reynolds, Frank Gerloff, Bridget Acland, Wendell Foster, Gloria Alvarez, Trey Good, Carly Harding.

## ENTREPRENEURIAL SCHOLARSHIP ESTABLISHED BY EARL KLINE

This past Spring Semester, the College of Natural Resources & Environment, the Wood Enterprise Institute (WEI) and the Whitehurst family established the Wood Enterprise Institute Entrepreneurial Scholarship program. A \$500 scholarship stipend is offered to each student to recognize exemplary students who participate in leadership roles to collaboratively unleash their passion for innovation and creativity towards building a successful entrepreneurial experience. The scholarship seeks up to 8 students each year to lead the development of WEI projects and to mentor students involved in project activities.

The first seven recipients of the Entrepreneurial Scholarship have been selected for the 2015 Fall Semester to unleash their passion for building a successful entrepreneurial experience. Their first experience began during the first weekend of the semester with an intensive problem solving and team building retreat at Mountain Lake, Virginia. The retreat introduced a rigorous problem solving technique that teaches how to address challenges through coaching and teamwork. The students will apply what they've learned towards this year's WEI business projects.

# NWPCA AND VT TEAMS UP TO OFFER A PALLET DESIGN AND PERFORMANCE SHORT COURSE

BY LASZLO HORVATH

In August, the National Wooden Pallet and Container Association (NWPCA) and the Center for Packaging and Unit Load Design co-hosted a sold-out two and half day educational short course.

The course, titled “Wood Pallet Design and Performance: Pallet Design in the 21st Century,” focused on developing techniques to design efficient and safe wood pallets using the industry standard software program, The Pallet Design System™ (PDS).

The course covered the major aspects of pallet design that affect performance: the location and dimensions of pallet components, the



materials used, and the loading and handling conditions the pallet experiences. Amazon, DuPont, and 19 companies representing a broad cross-section of pallet manufacturers and recyclers, pallet brokers, and end-users of pallets participated. This course provides these packaging specialists a range of industry and academic experiences on safe pallet design techniques.



# COLLABORATION WITH COSTA RICA TECH THROUGH ONLINE-COURSE ON LEAN LOGISTICS

BY HENRY QUESADA

From May 12 to August 5, 2015 associate professor Henry Quesada at the Department of Sustainable Biomaterials at Virginia Tech delivered an online-course on Lean Logistics for students of the Manufacturing Systems Master

degree program at the Costa Rica Institute of Technology (Costa Rica Tech).

The delivery methods included synchronous and asynchronous online activities. The



platform Scholar hosted at Virginia Tech was used for the asynchronous part of the course. Scholar is one of Virginia Tech's learning management systems. The tool WebEx was used for the synchronous (live meetings) of the course. Students and the instructor met once a week during the time of the course. WebEx is a unique platform that allows the replication of many face-to-face classrooms features such as sharing of presentations, blackboard, and various methods for student engagement.

A total of 34 students participated in the 12-week master level class. The Department of Sustainable Biomaterial is one of the country leaders in Packaging and Design systems.

Logistics is an important component in this area of research and companies are putting a lot of resources in understanding their supply chains and how to make it more effective and efficient. Lean Management applied to Logistics and Supply Chain is a growing area of interest for companies given the potential for increasing the performance of the supply chain through the application of lean management tools.

If you are interested in learning more about online learning and lean logistics, please contact Dr. Henry Quesada at [quesada@vt.edu](mailto:quesada@vt.edu). We will be happy to assist you.



## VIRGINIA EXTENSION HOSTS EURASIAN TIMBER DELEGATION

BY URS BUEHLMANN



The McCormick Farm in Raphine, VA. The farm serves as the Shenandoah Valley Agricultural Research and Extension Center and is owned by Virginia Tech.

On July 24, 2015, Virginia Cooperative Extension Agent Adam Downing and Extension Specialist Urs Buehlmann with John Campbell and Charles Becker from the Virginia Department of Forestry hosted a delegation of timber and wood processing management specialists from Eurasia under the leadership of Ms. Becky Long, International Trade Specialist, U.S. Department of Commerce at the McCormick Farm in Raphine, VA

The 18 individuals from Kazakhstan, Tajikistan, Russia, and the Ukraine are executives of

companies and organizations (4 national/regional government entities and 14 private companies) operating in areas ranging from forest management to timber harvesting as well as processing of value added products visited the U.S. by invitation of the U.S. Department of Commerce under the SABIT (Special American Business Internship Training) of the U.S. Department of Commerce, International Trade Administration for three weeks from July 18 – August 8, 2015. The delegates spent a few days in DC, and then traveled to several different locations across the U.S., with Virginia being one of them. The objective was to learn about trends and best practices in forest management, timber harvesting, and primary and secondary wood processing. During their time in the United States, they met with federal/state government agencies, industry associations, universities, timber harvesting and processing

companies, and technology and equipment companies.

The program in Virginia encompassed a visit to a hardwood sawmill, a tour through a demonstration forest, and a seminar on Lean Manufacturing. In his seminar on Lean Manufacturing, Extension Specialist Urs Buehlmann made a case in favor of this widely used, highly successful manufacturing philosophy that consists of focusing on adding value to products and eliminating all waste.

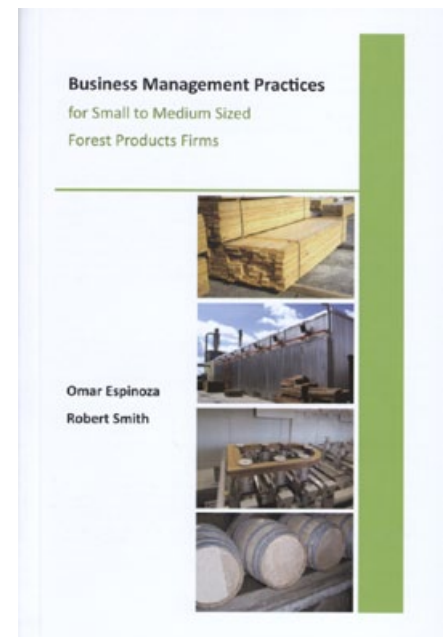
Hopefully, the delegates left with many positive impressions from Virginia and with an understanding of and an appreciation for the beautiful products from our forests. Maybe, one day, a part of the almost \$3 billion of farm and forestry products exported from Virginia annually, may go through the hands of one of the delegates that visited our state.



## NEW BOOK HELPS PUT THOSE STARTING A FOREST PRODUCTS BUSINESS ON THE PATH TO SUCCESS

The Department of Sustainable Biomaterials has released a new publication targeted to those interested in starting a forest products-related business or for individuals without a forest products background who have been

hired to work management positions in existing forest products



companies. The authors, Robert (Bob) L. Smith, professor of forest products marketing and head of the Department of Sustainable Biomaterials in the College of Natural Resources and Environment, and Omar Espinoza, assistant professor and chair of the Forest Products Management Development Institute at the University of Minnesota, drew upon their management experience in the forest products industry and as educators and researchers.

Individuals often enter the forest products industry based on their passion for working with wood instead of with a well thought-out business plan. "Business Management Practices for Small to Medium Sized Forest Products Firms" presents the nuts and bolts of business management as it relates to the forest products industry, offering business owners and managers a framework for success. "In working with the forest products industry, owners and managers have indicated that there is a need for

management education for new employees," Smith said. "It is our hope that this book will help companies with their training efforts as well as guide individuals who are establishing new businesses." The book's chapters cover major topics in business management, such as strategic planning, human resources, finance, marketing, and operations management. The final chapter guides readers through writing a business plan. Appendixes include a sample business plan and contact information for dozens of agencies and organizations that can serve as resources.

The book, funded by the U.S. Forest Service Northeastern Area State and Private Forestry's Wood Education Resource Center, is a follow-up to a 2008 joint publication on marketing of which Smith was a co-author.

The book can be downloaded free at: [sbio.vt.edu](http://sbio.vt.edu)



## WBC HOSTS WOOD ADHESION SHORT COURSE

BY LINDA CAUDILL

The Wood-Based Composites Center (WBC) welcomed 20 industry professionals to Blacksburg in August for the 13th Wood Adhesion Short Course. Participants learned about wood structure and properties, the importance of the wood/water relationship, adhesion and common industry adhesives,

among other topics. Instructors included Virginia Tech's Chip Frazier and, from Oregon State University, Drs. Fred Kamke and John Nairn. The WBC, a National Science Foundation Industry/University Cooperative Research Center, I/UCRC, has been offering the course since 2000.



[sbio.vt.edu](http://sbio.vt.edu)