



The Department of

SUSTAINABLE MATERIALS

EDUCATION
ABROAD IN
NEW ZEALAND,
IRELAND, AND
COSTA RICA

VISITING
PROFESSORS,
RESEARCH
SYMPOSIUMS
MORE

A FACULTY
MEMBER SAYS
GOODBYE

EDUCATION ABROAD IN NEW ZEALAND, IRELAND, AND COSTA RICA

NOTE ON EDUCATION ABROAD IN IRELAND BY BOB BUSH

How are culture, natural resources, and design related? No, not a pop quiz. Instead, this is the question explored by thirteen Virginia Tech students as they traveled to Ireland during spring break as part of the course, SBIO 3954. The course promotes cross-cultural engagement while learning how culture, design, and natural resources are interconnected. Sustainable Biomaterials Professor Robert Bush led the course with the assistance of Dr. Earl Kline who is on research leave in Ireland.

Students began investigating the question in Blacksburg by studying Irish history and how Ireland is perceived in the United States. Each student in the course was paired with a student at Galway-Mayo Institute of Technology in Letterfrack, County Galway, Ireland and challenged to work together on two projects. After several videoconference sessions and numerous e-mails, they traveled to Ireland to meet their partners and spend a week working together. Virginia Tech students gained hands on experience as they learned the art and skills of marquetry from their Irish partners. Also, VT and GMIT students worked



Galway-Mayo Institute of Technology Instructor Ann Foley (center) explains the marquetry veneering process to Virginia Tech student Zoe Carroll (left) and other students. Virginia Tech students designed and produced the marquetry to represent their impressions and experiences in Ireland.

together to help reestablish native woodland in Connemara National Park. After their travels in Ireland, students returned to Blacksburg where they reflected on their experiences and wrote a paper on a topic they developed while in Ireland. Students complete the course with an enhanced appreciation of Ireland as well as Irish culture and its impact on the United States.

COVER: CNRE students Anna McAuley (left) and Sarah Schneider plant a holly as part of a project to reestablish native woodlands in Connemara National Park, County Galway, Ireland 2014

SPRING BREAK IN COSTA RICA BY HENRY QUESADA

Assistant Professor Henry Quesada from the Department of Sustainable Biomaterials traveled to Costa Rica with a group of 8 students from the College of Natural Resources and Environment (CNRE). The trip is part of the course SBIO 3954 Global Issues in Sustainability, a 3-hour credit course that is taught every Spring semester at Virginia Tech. The goal of the course is to teach students how natural resources are used in a global context in a sustainable way.



SBIO 3954 students pose at the crater of Irazu Volcano during their field trip to Costa Rica.

During the field trip, students receive lectures from Costa Rica Tech faculty, tour national parks, and engage in experiential learning activities led by local entrepreneurs, environmentalists,

and community leaders. Students ranked the field trip as a meaningful learning activity to reinforce concepts and theory learned in the classroom. The opportunity to get in touch with local leaders in the government, industry, and academic community gave the students a unique chance to learn how humans interact with natural resources to create a sustainable society. For example, the visit to Ecotermales, a hot spring water resort, provided the students with a view of how liquid and solid waste can be transformed into value-added products.

In addition, a visit to a vertically-integrated wood products company helped the students to understand how renewable materials such as timber are grown, harvested, processed, and distributed to consumers in local and international markets.

Other topics include generation of electricity using renewable sources, wildlife management, ecotourism, water management, and education and sustainability.



PanamericanWood's plantation manager Folker Kottman explains how Teak (*Tectona grandis*) trees are harvested and prepared for manufacturing.

WINTER BREAK IN NEW ZEALAND BY BOB SMITH

Bob Smith led 18 students from five different colleges at Virginia Tech to the south island of New Zealand during the winter break to study resource conservation, and the natural and social history of the country (*Sustaining Human Societies and the Natural Environment*).

New Zealand separated early from the ancient continent Gondwana, and this long isolation created an island nation with a unique natural heritage.

It was one of the last areas to be settled by Europeans in the mid 1800s. Many of the plants and animals that have evolved here are quite unique. The goal of this course was to use New Zealand as a case-study to better understand relationships between human societies and the natural environment.

Our program focused on topics related to sustainable development through educational travel, service learning activities, field trips, lecture presentations and seminars, and coursework exercises. Much of the time was spent in the forests, on farms, and near/on

the water to fully understand the interactions between humans and the environment. As a service project, students spent one day deconstructing decks and fences that were severely damaged during the major earthquake over two years ago in Christ Church. Using natural and social science perspectives, we emphasized the human impacts on natural resources and explored sustainable use and conservation issues.



Students climbing the Fox Glacier in western New Zealand.

Students spent time studying the indigenous culture and even got to hear from one of the tribal leaders. They had the opportunity to go sea kayaking and swim with dolphins as part of the study of society's impact on

wildlife. The impact of a changing climate was demonstrated as we climbed the Fox Glacier. Many of the students stated that this education abroad experience was a life changing event for them and hope that they will continue to study the sustainability issues that were highlighted in this class.

SAYING GOODBYE

BY SCOTT RENNECKAR

This time of year always marks sad goodbyes with graduates leaving for exciting careers, being able to implement their newfound knowledge for the benefit of society. These new beginnings for graduates are part of the academic cycle with a new class of students starting in the fall with open minds and boundless energy. My own study in the department began 20 years ago as a freshman entering Virginia Tech to study Wood Science with little knowledge of the subject outside of a friend that mentioned if I was interested in engineering, science, and business, I should study Wood Science and Forest Products. After completing Wood Identification and Properties my freshman year, thanks to the great advising of Dr. "Uncle Geza" Ifju, who said I can just pick up second semester biology later, I quickly found that I was enamored by wood as a key sustainable biomaterial for society and I knew I found the right major (no matter how much my roommates teased me about toothpicks or how many times by parents asked me, "isn't there some technical term like xylemology?").

Numerous courses about the most common and also the most complex material later prepared me to leave Blacksburg to start a master's degree at the University of California during the dot-com boom and the sunset years of the Wood Science Program at Berkeley. After figuring out how to write a thesis and graduate, I found my way back to Blacksburg to start



Scott Renneckar lectures in Slovenia about composites created from Sustainable Biomaterials.

a PhD degree co-advised by Drs. Zink-Sharp and Glasser. My first semester back, I quickly discovered that new technology was letting us explore features at the nanoscale (one billionth of a meter) with precision not previously known. From learning high-resolution microscopy techniques in order to explore fiber modification to preparing nanometer thick Langmuir Blodgett films of cellulose for model studies, I was developing a new perspective on the elegance of wood and other natural materials. Additionally, I was able to serve as a teaching assistant for Wood Identification and Properties getting my feet wet in the classroom.

My studies at Virginia Tech were formative providing me the opportunities to learn about conducting high caliber science on materials that are grown within our backyards and borders and teaching about them in the classroom.

Since serving as a faculty member, I have seen first hand the effort the faculty put into this program to inspire students and make the world more sustainable through world-class research. I would like to openly thank them for contributing to the successes I have had in my career. As our Department continues to

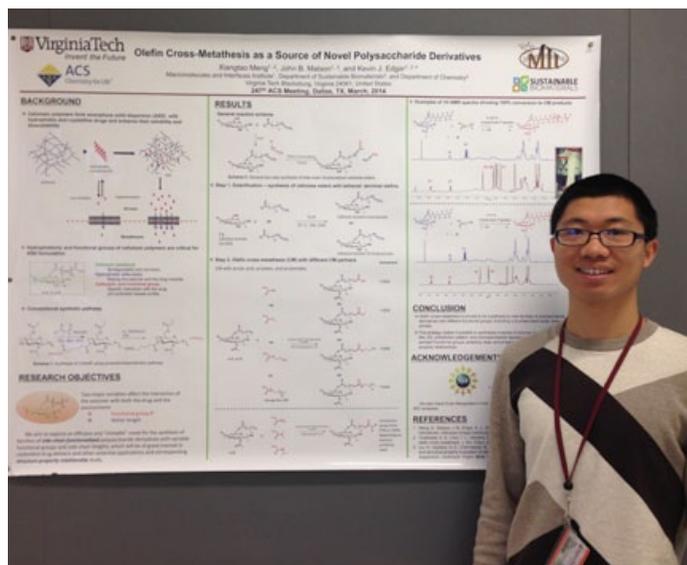
expand into new fields related to packaging, bioenergy, and biomaterials, I expect many more students like me with broad interest in the environment related to science, engineering, and business will be starting in the fall of 2014 not realizing they just stumbled across a career of a life time.

Note: Dr. Rennekar has taken a chaired position at the University of British Columbia. The department wishes Scott the very best in his new position and will continue to work with him in his new role.

SBIO STUDENTS SHINE IN DALLAS BY KEVIN EDGAR

SBIO was well represented at the recent American Chemical Society national meeting in Dallas, Texas, March 16-20. Professors Chip Frazier, Barry Goodell, Scott Rennekar, and Kevin Edgar attended, with Edgar, Goodell, and Rennekar giving presentations, and students Jung Ki Hong, Joyann Marks, Xiangtao Meng, Xinyi Tan, Guigui Wang, Xing Yang, Ruoran Zhang, Wei Zhang, and Xueyan Zheng attended and presented. SBIO was a major contributor to an outstanding day-long symposium based on the results of a USDA-funded educational program at Virginia Tech, on Bio-based Sustainable Materials as Resources for Tomorrow (BSMART); the symposium featured entirely Virginia Tech graduate student speakers from the laboratories of professors in the VT Bio-based Materials Center! On Sunday night a poster competition was held at the

Cellulose and Renewable Materials Division poster session; second-year graduate student Xiangtao Meng of the Edgar laboratory won first prize, of the 100 or so posters presented, with the award including free participation in the Division awards dinner on Tuesday night.



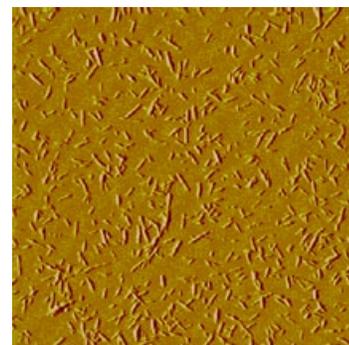
Xiangtao Meng next to his award-winning poster

SHUPING DONG SUCCESSFULLY DEFENDS MASTER'S THESIS

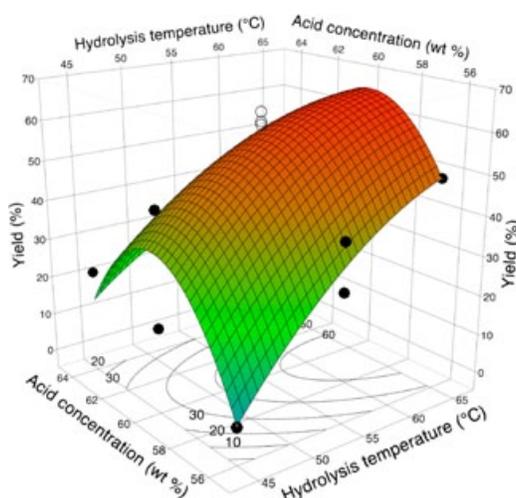
BY MAREN ROMAN

On Thursday, April 24, Shuping Dong, a graduate student under the guidance of Prof. Maren Roman, successfully defended her master's thesis and earned an M.S. in Macromolecular Science and Engineering. Shuping's master's research investigated the effects of the hydrolysis conditions on the yield and properties of cellulose nanocrystals produced by sulfuric acid hydrolysis. Using a statistical approach to optimize the hydrolysis conditions for maximum yield, she completed two experimental designs, a central composite design and a Box-Behnken design, and analyzed the data with response surface methodology. The experimental parameters in her study were the sulfuric acid concentration, the hydrolysis temperature, and the hydrolysis time. Her research showed that cellulose nanocrystal yields of close to 70% are possible, far exceeding the yields of 10-20%, obtained with commonly used hydrolysis conditions. Her research also showed that the negative surface charge of cellulose nanocrystals prepared by sulfuric acid hydrolysis depends linearly on the sulfuric acid concentration and, to a lesser extent, hydrolysis temperature but

is independent of hydrolysis time for hydrolysis times exceeding 30 min. Shuping's statistical models enable scientists to predict the yield and cellulose nanocrystal properties for a given set of hydrolysis conditions or, alternatively, determine the hydrolysis conditions for a desired combination of yield and particle properties.



Atomic force microscopy image of cellulose nanocrystals (5 μm by 5 μm)



Graph showing the Box-Behnken cellulose nanocrystal yield response surface for acid concentration and hydrolysis temperature

Shuping is planning to publish her master's thesis this summer in the form of two journal publications. In addition to her master's project, Shuping has completed research on the potential use of cellulose nanocrystals for targeted drug delivery applications and has published three first-author publications on this project, with two more publications in preparation. Her first paper, which was published in the prestigious Journal of the American Chemical Society, has already been cited 86 times.



Liz Mills and Paige McKinley, undergraduate students in SBIO, learn about wood turning at World Wood Day 2014

VIRGINIA TECH PARTICIPATES IN WORLD WOOD DAY EVENTS BY BARRY GOODELL

On March 21 and 22, 2014, the US World Wood Day event was held outside of Washington, DC in Bethesda, Maryland. The theme of the event was: *The Melting Pot of American Culture and How it has Impacted the Use of Wood*, and it coincided with the larger International World Wood Day activities that were being held in Fujian Province, China. Participants from Virginia Tech included undergraduate students, Ms. Paige McKinley, an SBIO Senior and President of the VT Forest Products Club and Elizabeth “Liz” Mills, a Junior in the SBIO program and member of the VT Forest Products Club and President of the VT

Natural Resource Recreation Society. Both Paige and Liz helped in coordinating set-up of the event with the organizers and facilitated a well-run meeting. Dr. Zhangling Chen, Research Scientist, and Dr. Barry Goodell, Professor, both in the SBIO Department, were on the Organizing Committee. Goodell also moderated the Friday morning sessions, and Chen spoke on: “Effective Drying is Necessary for Quality Wood Products.”

The Chair of the Event was Dr. Howard Rosen, USFS Retired and, in addition to the technical presentations on Friday, there were

demonstrations of woodcarving, woodturning, basket making, furniture making, musical instrument craftsmanship, and many other activities.

At right, and center left: Paige McKinley and Liz Mills, undergraduate students, and Dr. Zhangling Chen, in the SBIO Department show school children attending Saturday events at World Wood Day how air can be blown through the vessels of red oak to make bubbles.



VT PACKAGING HOSTS NATIONAL PACKAGING EVENT

BY MADELINE ALDEN (SENIOR, SBIO)

On March 20-22, Virginia Tech's Packaging Student Club hosted the 29th Annual National Packaging Jamboree at the Squires Student Center in Blacksburg, Va. The Packaging Jamboree is a yearly conference where packaging students and industry leaders from across the country gather together to discuss current issues and innovations in the packaging industry. The event takes place at a different university each year. Participating schools included Clemson University, Rochester Institute of Technology, Michigan State University, Virginia Tech, and the University of Wisconsin-Stout. This year around 70 students and 40 industry attendees from over a dozen companies including Packaging Corporation of America, Klockner Pentaplast, Printpack Inc., PECO Inc., Lansmont Inc, United Pallet, Inc., Stephen Gould Cor., and Scholle Packaging, participated in the event.

One of most valuable opportunities at the event was the ability for students to network with companies within their chosen field of study. Alyssa Lopez, a junior in the program remarked, "One of the best opportunities at Jamboree was the exposure to different professionals from all corners of the packaging industry. I was able to have one on one time with companies and really get to know their mission, which also puts my name in their head for future job openings."

Opening remarks to the event's festivities were given by Dr. Paul Winistorfer, the Dean of the College of Natural Resources and Environment, Dr. Bob Smith, the Head of the Department of Sustainable Biomaterials, and Dr. Mark White, Professor Emeritus. Dr. White, former director of the Center for Unit Load and Design and founder of the packaging center at the Department of Sustainable Biomaterials,

introduced the history, goal and vision of Virginia Tech and the Packaging program. In his presentation, Dr. White introduced the new Virginia Tech Packaging program: "At Virginia Tech, our goal is to create a professional, educated in the design of all packaging components and how they interact. To arm these professionals with tools that model these interactions with the aim of designing supply chains more systematically."

Two keynote speakers' presentations were given by John Antle from ABF Freight and Bob Sanders from IBM that followed the theme for this year's Jamboree which was "Packaging in a Global World." Lasmont, White & Company, and Scholle Packaging provided three educational workshops regarding different components of packaging systems. Students competed in an interactive competition to test the best protective packaging for an egg that was dropped from a height of two stories in Squires Student Center. Virginia Tech's Mascot, the Hokie Bird, excitedly dropped each package. Following the competition, Naturally Sharp, an all-male acapella group affiliated with Virginia Tech, performed

during dinner in the Commonwealth Ballroom for the event.

Mr. Bob Sanders (IBM, NC), said "I very much enjoyed the conference, meeting the students, faculty and industry representatives and spending some quality time in downtown

Blacksburg. Virginia Tech must be proud of this success." Mr. Bryan Williams (Lansmont, Inc, CA), offered a workshop about vehicle dynamics for packaging. Planning the event was a learning experience for all the students involved. Cyrus Adibpour, Vice President of the Packaging club, commented, "The packaging club worked countless hours and was truly dedicated to making the Jamboree run smoothly.

It was primarily successful due to the club's hard work and I strongly believe no one could ever match up to their diligence." More than a dozen students have been planning the event since the fall of 2013 including Mike Deck, a current senior in the packaging program. Deck's take away from the event was that, "It was a great experience planning such a worthwhile event that helped connect students and employers within the packaging industry."



The HokieBird drops a protective egg package made of simple packaging materials.



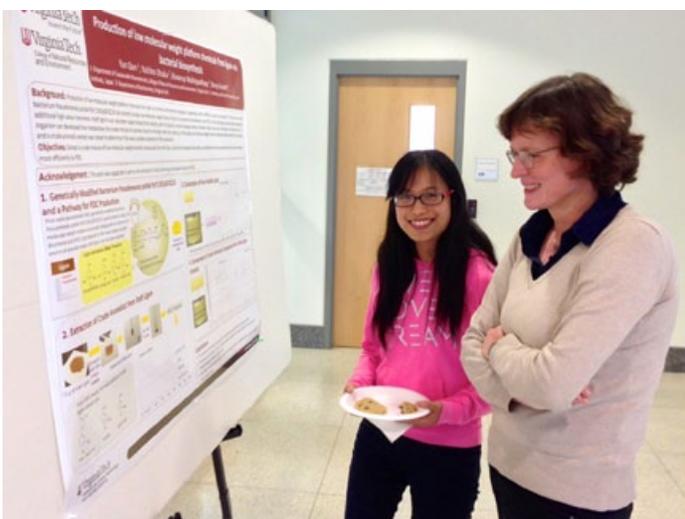
Poster presentations at the 3rd BBMC Graduate Research Symposium

BIO-BASED MATERIALS CENTER HOLDS 3RD GRADUATE RESEARCH SYMPOSIUM BY MAREN ROMAN

On Wednesday, April 30, the Bio-based Materials Center (BBMC) at Virginia Tech held its 3rd Graduate Research Symposium. Twenty-one graduate students of BBMC faculty members from various disciplines, ranging from wood science to biomedical engineering, presented their research projects in 12 oral

and 9 poster presentations. This year's keynote presentation was given by Prof. Dr. Petra Mischnick from the Institute of Food Chemistry of the Technische Universität Braunschweig in Germany and titled "Sequencing" polysaccharides and polysaccharide derivatives – What is possible? Glycoscience, one of the center's research foci, has recently been recognized as a frontier in chemical, biological, and medical research.

The symposium, made possible with the help of graduate students Cole Burch, Yifan Dong, Jung Ki Hong, Joyann Marks, Xiangtao Meng, Jameison Rolle, Guigui Wan, and Xueyan Zheng, was well attended and showcased the diverse nature of the BBMC's research activities. The symposium program and presentation

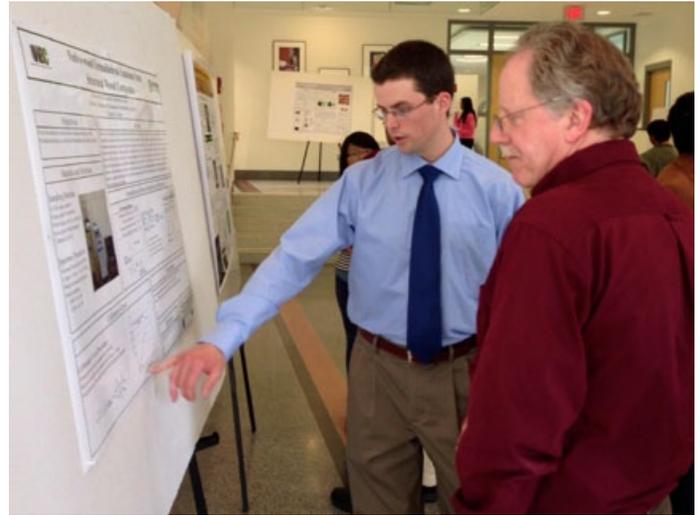


Yun Qian and Petra Mischnick

abstracts are posted under Events on the BBMC's Web site at www.bbmc.ictas.vt.edu.

Founded in 2008 and led by Professor Kevin Edgar of the Department of Sustainable Biomaterials, the BBMC is a multidisciplinary academic center under the Institute for Critical Technology and Applied Science (ICTAS) with funding from ICTAS and the USDA National Institute of Food and Agriculture. The BBMC fosters and funds collaborative and interdisciplinary research projects and offers a graduate certificate in Bio-based Materials. Faculty members of the BBMC also include Professors

Chip Frazier, Barry Goodell, Scott Rennecker, and Maren Roman.



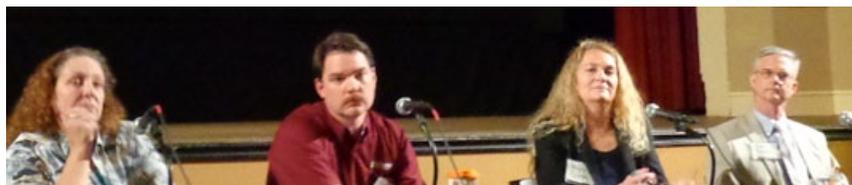
Cole Burch and Kevin Edgar



HINDMAN AND BOULDIN PANELISTS AT 'A FIERCE GREEN FIRE' BY DAN HINDMAN

On April 5th, Drs. Hindman and Bouldin participated in a panel discussion after the movie 'A Fierce Green Fire' at the Lyric Theater, sponsored by Sustainable Blacksburg. 'A Fierce Green Fire' chronicles the environmental movement of the 20th century, beginning with the Sierra Club's work in dam protection in the Grand Canyon to present day concerns over climate change and the growth of sustainable building and business practices.

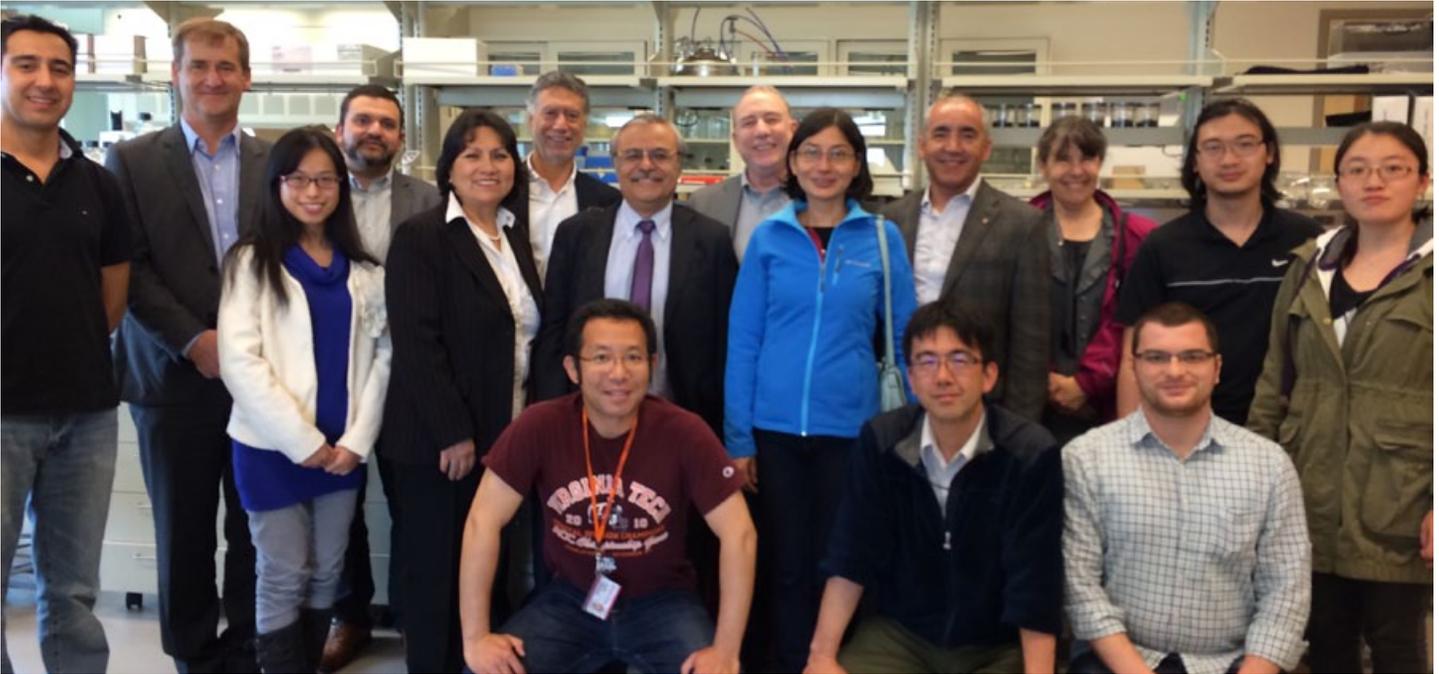
The film was also helpful to capture the concern and involvement that the 'green movement' has inspired in the general population. "The number of sustainable businesses and companies continue to increase every year in our area. There is a value — both socially and economically — of including sustainable practices in our work," says Dr. Hindman.



Dan Hindman (2nd from left), John Boldin (right)

CHILEAN VISITORS DISCUSS SUSTAINABLE RESEARCH INITIATIVES

BY BARRY GOODELL



Front row – seated: -from left: Dr. Yuichiro Otsuka – Visiting Scientist on Sabbatical, Forestry and Forest Products Research Institute, Tsukuba, Japan; Professor Dr. Tomonori Sonoki, Visiting Professor on Sabbatical, Hirosaki University, Japan; Mr. Atanur Satir, VT Graduate Student in Professor Goodell’s laboratory. Middle row – from left: Ms. Yun Qian, Professor Lourdes Oruela (Universidad de San Francisco, Quito Ecuador), Graduate Students in Professor Goodell’s laboratory; Dr. Bernabé Rivas, Vice Chancellor for Research (Vicerrector de Investigación y Desarrollo), Universidad de Concepción (UdeC); Professor Dr. Sofia Valenzuela. Forest Genomics, UdeC; Professor Dr. Jaime Rodriguez, Director, Biotechnology Center, UdeC; Mr. Lam Thieu and Ms. Yiming Zhang, Graduate Students in Professor Goodell’s laboratory; Back Row – from left: Dr. Omar Uyarte, Visiting Scientist, University of São Paulo in Lorena, Brazil; Dr. Alex Berg, Professor and Director, Director of Technological Development Unity (Unidad de Desarrollo Tecnológico, UDT), UdeC; Dr. Jose Antonio Carrasco. Executive Director for Bioeconomy, UdeC; Ing. Marcelo Molina. Director of Development and Innovation (Director de Desarrollo e Innovación). UdeC; Professor Barry Goodell and Professor Jody Jellison, Virginia Tech .Photographed in Professor Goodell’s Sustainable Biomaterials and Bioenergy Laboratory in the ICTAS II Building.

A team of University Center Directors, Researchers and the Vice Chancellor of Research from the [Universidad de Concepción](#) in Chile visited Virginia Tech on April 24 and 25, 2014. The group met with the Departments of Forest Resources and Environmental Conservation: Sustainable Biomaterials; Horticulture; Plant Pathology, Physiology and Weed Science; and Crop, Soils and Environmental Sciences. The University of Concepción generates the largest number of patents among any of the

Universities in Chile. The purpose of the group’s visit was to make research connections and to explore ways to advance intellectual property development focusing on successful transition of patents to technology commercialization. A primary goal was the exploration of forest and agricultural genomics, and the utilization of sustainable biomaterials relative to enhanced successful commercialization of products from these resources. In addition to visiting with VT researchers, the group also was able

to interact with VTIP personnel and members of the University Administration. During the visit, Professors Alex Berg and Sofia Valenzuela from Chile presented a seminar entitled: **Forest Biomaterials and Forest Genomics**

Research: 1) Collaborative and Institutional Performance Agreements, and 2) Research at the Universidad de Concepción, Chile - Biotechnology Center.



BLAKELEY HEADS TO LAX CHAMPIONSHIPS

BY BARRY GOODELL



Charlie Blakeley, one of our SBIO seniors is a Captain and Goal Keeper on the [Virginia Tech Lacrosse Team](#).

The team has clinched a Playoff spot in the SELC tournament, and are headed to California for the [National Championships](#) soon.



wei **SOLD OUT!**



It's the time of the year when the Wood Enterprise Institute traditionally is holding an Open House to report its achievement. However, due to the success of this year's team, we decided to communicate our achievements by email to save the time for production and distribution of the orders received.

By April 18th, all 100 of the cutting boards scheduled for production had sold out. Through the use of smart marketing involving outlets such as the Blacksburg Farmer's Market and the CNRE Awards banquet, the product was sold out 30 days ahead of time and we obtained quality customer feedback.

By selling 100 cutting boards, the WEI program brought in revenues of \$5,800.00 with \$3,700.00 in net profit.

Thank you all for supporting WEI throughout the school year! Special thanks goes to our sponsors (listed right) for their continued backing and to David Jones, SBIO wood shop manager, a person who puts his students first!

Respectfully,

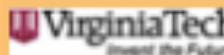
The 2013-2014 WEI team



Northern Neck Lumber Co.



huntersvillehardwoods





SBIO Extension

Virginia Cooperative Extension

Virginia Tech
Virginia State University



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Improvement

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.

Housing market updates

The April 2014 housing report for the February 2014 data has been released. The housing scorecard (Figure 1) displays a mixed picture, with several housing market indicators declining in February. However, as this decline being considered normal for a winter month, we will have to wait for the next few months' data to be able to spot a trend. The bright spot in April's scorecard was the increase in housing permits, which may hold promise for the future. Housing completions data was also positive.

	M/M	Y/Y
Housing Starts ^A	▼0.2%	▼6.4%
Single-Family Starts ^A	▲0.3%	▼10.6%
Housing Permits ^A	▲7.7%	▲6.9%
Housing Completions ^A	▲4.4%	▲21.9%
New Single-Family House Sales ^A	▼3.3%	▼1.1%
Existing House Sales ^B	▼0.4%	▼7.1%
Private Residential Construction Spending ^A	▼0.8%	▲13.5%
Single-Family Construction Spending ^A	1.1% ▼	▲13.6%

M/M = month-over-month; Y/Y = year-over-year
Source: ^AU.S. Department of Commerce Construction; ^BNational Association of Realtors (NAR)
Revised 2/14

February 2014 housing scorecard

Overall, the near-term outlook on the U.S. housing market faces some potentially negative macro-factors at this point in time for a robust housing recovery (based on historical long-term averages), including:

1. Lack-luster household formation,
2. a lack of well-paying jobs being created,
3. a sluggish economy,
4. declining real median annual household incomes (though January increased slightly),
5. strict home loan lending standards,
6. new banking regulations, and
7. global uncertainty.



Urs Buehlmann

Urs Buehlmann and Al Schuler publish monthly updates on the U.S. housing market to provide our industry partners with timely information to gauge market opportunities and to allow for planning.

All past housing reports can be viewed at: <http://woodproducts.sbio.vt.edu/housing-report/>. To be added to the mailing list for the free monthly housing reports email to buehlmann@gmail.com

Helping the Primary Industry

In March, Dr. Brian Bond and Dr. Henry Quesada of the Department of Sustainable Biomaterials and Extension Agent, Bill Worrell, assisted Southern Forest Products, a hardwood sawmill in Appalachia, Virginia, conducted a grade yield study to compare two different sawing decision scenarios. The small scale study was conducted to determine the value difference between sawing small diameter, low grade logs into lumber versus sawing lumber and pallet cants. There is a significant value difference between the two sawing decisions and the goal was to help the company make the best decision for their sawmill setup and log quality.



Dr. Brian Bond discusses lumber productivity with the general manager of Southern Forest Products

Short-course in Statistical Process Control (SPC)

On March 18, Henry Quesada, extension specialist in the Department of Sustainable Biomaterials, delivered an SPC short-course to a group of 22 primary wood products producers in Costa Rica. The course covered a review of basic probability distributions and the teaching of X control charts to monitor continuous variables such as thickness, width, length, and moisture content. Attribute control charts were also taught to the participants. These type of charts are used to control and monitor attribute data such as defects and number of defects. The teaching methodology included the use of MS Excel to capture, analyze, and plot the control charts.



Participants use MS Excel to implement a SPC system

Wood Preservation Re-certification Workshops

Dr. Brian Bond with the assistance of the Virginia Department of Agriculture and Consumer Services, conducted two category-12 (Wood Preservation) recertification workshops. The workshops cover rules and regulations, a review of wood treating chemicals and treatment processes, insects and decay in wood and safety measured for the treating industry. One workshop was held in Lexington, VA and the other

held in Madison, VA. Over 20 certified applicators and technicians attended the two workshops. All registered applicators and technicians are required to attend a recertification course every two years to maintain their certification. The workshops are held at the end of March every year.

SBIO faculty collaborates with USAID extension project in Nicaragua



The InnoVATE team in Nicaragua from left to right: Paul Rivera (USAID), Nicole Webster (Penn State), Henry Quesada (VT), Grecia Morales (translator), Nikki Kernaghan (University of Florida), and Clara Cohen (USAID)

Henry Quesada collaborated in March with the Innovation for Agricultural Training and Education (InnoVATE) project, a USAID funded initiative that is led by Virginia Tech under the leadership of Tom Hammett. The project has as goal to create capacity development of agricultural training and education systems from primary school through secondary institutions, vocational schools and universities. InnoVATE targets developing countries where help is needed in building those capacities. Quesada traveled to Nicaragua in March to conduct a scoping mission. The goal was to visit government institutions, education centers, non-governmental organizations, and private industries to understand how they operate and to identify potential improvement strategies.

Upcoming Events

Educational Sessions offered for the 2014 Richmond Expo

The Department of Sustainable Biomaterials (SBIO) at Virginia Tech in conjunction with the Virginia Forest Products Association (VFPA) and Virginia Cooperative Extension (VCE) is offering an educational session on May 15, 2014 as part of the 2014 Richmond Expo organized by VFPA. The educational session is divided in two tracks. The morning track will focus on drying operations and the afternoon track will focus on financial management principles for forest products industries. For more information and registration: sim.sbio.vt.edu/?p=1961

Demand for Hardwood Drying Assistance Increases

As the wood industry continues its economic recovery, the demand for assistance and training has increased. Dr. Bond, associate professor and extension specialist in the department visited several hardwood drying operations in February, March, and April, to assist with operational improvements, train new personnel and provide suggestions for production and quality improvement. He will be conducting two wood drying workshops this spring, the first, **Improving The Quality of Lumber Drying Operations**, will be held at the Richmond Expo, exporichmond.com/Education.html, May 15th and the second, **Solar Drying of Lumber**, sbio.vt.edu/workshops/solar-drying/ will be held in Blacksburg, May 30th.