



INSIDE VT WOOD

Holiday Greetings to One and All from Virginia Tech and the Department of Wood Science and Forest Products.

It has been a great year in the Department with many exciting activities. We have seen new research funding come in for fields ranging from Construction Safety to Cellulosic Drug Delivery. Our Packaging Systems and Design program is growing in leaps and bounds. This year meetings and conferences were sponsored by our department faculty in areas ranging from Hardwood Processing and Innovation-based manufacturing, to Cellulose chemistry, biopolymers and biomass processing.

We have also seen significant growth in our undergraduate student enrollment thanks to the efforts of our faculty in student recruitment, and especially the efforts of our student ambassadors. Just a little background on that growth: For those of you that have checked our website, you have noted that since last April we have been promoting the department's growing interests in the field of sustainable biomaterials. Wood is of course the most abundant and widely used sustainable biomaterial, but with all the work the department is doing in areas including innovation-based manufacturing, polymeric drug delivery systems and bone scaffold materials, and new engineered packaging materials, we have expanded well beyond the traditional bounds of wood products. One of the reasons for our growth in student enrollment in the past year is the promotion of these new areas of interest, under the banner "Education in Sustainable Biomaterials". It has been exciting to see the growth in interest in these areas by prospective students, and we look at this as a way to introduce wood and other lignocellulosic materials to a broader population of students.

As many of you are aware, all of the programs in wood science across the United States have faced issues of low student enrollments, and many of these programs have either gone through a re-branding (renaming) process, or they have disappeared. At Virginia Tech, we have also been faced with this dilemma, but we have been taking positive action. Because our department has grown over the years to encompass many new areas of interest, even while maintaining our core competencies in wood science and forest products, a new name that better fits the breadth of the department is appropriate. And, as we head into the new year, we wanted you all to know that soon we expect to be able to make a formal announcement about the new departmental name which will help us grow and serve our traditional base better, while also expanding to serve a broader base of industries including those in the chemical processing, packaging, manufacturing, and advanced materials fields.

Despite the current economic slowdown, the future is bright for the use of renewable, sustainable materials. Two recent surveys highlight (see the next pages of this newsletter) that renewable materials and environmental careers are where growth is occurring. We look upon these changes in a positive light and know that in the future, we are going to be educating an even stronger, and larger, base of students who will become the future leaders, managing new and expanding industries focused on wood products and sustainable biomaterials.

As always, we welcome your comments, and your help in shaping our student's educational future.

We wish you the Happiest of Holidays, and all the best for the New Year.

Barry Goodell

Head, Wood Science and Forest Products

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STUDENT SPOTLIGHT 2011



A few images of of students through the year. From hands-on craftsmanship in Innovation and Design, to Packaging Systems development, to the great work our student Ambassadors do in promoting the Department, our students are pushing the boundaries to become the next generation of leaders in the field. We feel very fortunate every day to have these great students in our classes, and to get to work with them on projects.





Eastman Graduate Student Symposium at Virginia Tech

By Kevin Edgar

On November 16, the fourth annual Eastman Graduate Student Symposium was held in the ICTAS I auditorium at Virginia Tech, showcasing the work of graduate students who work with polysaccharides as sustainable biomaterials in Wood Science and Forest Products, the interdisciplinary Macromolecular Science and Engineering program, and in Chemistry.

Nine students made oral presentations about their work to an audience of students, faculty, and Eastman representatives Dr. Laurel Reitfort and Dr. Wes McConnell. Over lunch, three other students made poster presentations about their work. At the end of the day a mixed Eastman/VT jury made the difficult decisions in assessing the quality of what everyone agreed was an outstanding group of presentations, best in the four year history of this symposium.

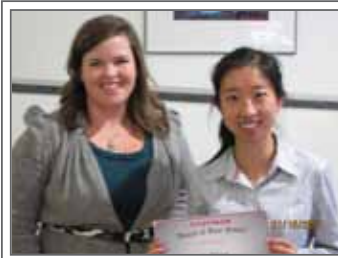
Jung-Ki Hong, a Ph.D. student working with Professor Maren Roman, made the first-place oral presentation. Siddhesh Pawar, a Ph.D. student working with Professor Kevin Edgar, had the second-place oral presentation. Ph.D. students Chao Wang (Professor Alan Esker) and Daiqiang Xu (Edgar) received awards of distinction for their oral presentations. Wei Zhang, a Ph.D. student working with Professor Scott Rennekar, had the first-place poster presentation. We appreciate Eastman's generous support, including cash awards to the oral and poster winners.



Laurel Reitfort, Jung-Ki Hong,
Wes McConnell



Reitfort and Siddhesh Pawar



Reitfort and Wei Zhang



Reitfort and Daiqiang Xu



Back Row, from left: Kevin Edgar, Scott Rennekar, Wes McConnell, Daiqiang Xu, Siddhesh Pawar, Chen Qiang, Bin Li, Jung Ki Hong, Richard Johnson. Front Row, from left: Laurel Reitfort, Junia Pereira, Rob Haupt, Shuping Dong, Wei Zhang. Kneeling: Maren Roman



WOOD 4984: Preparation for LEED Green Associate Exam

Spring 2012, CRN 18891

This course is a 1 credit preparation for the LEED Green Associate Exam. Students should have taken WOOD 3324 Green Building Systems or have equivalent knowledge of green building practices and systems.



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VT-Packaging hosted a Planning meeting for 2012 Packaging Summit

By Young T. Kim

The Virginia Tech Packaging program hosted a preparative and planning meeting for the 2012 Packaging Summit on Thursday, November 10th at the Brooks Forest Products Center.

Eleven attendees from eight global leading packaging companies (CSS Distribution Group, Inc. of Louisville, KY; GenPak, LLC of Charlotte, NC; Georgia Pacific (GP) of Atlanta, GA; Klockner Pentaplast of Rural Retreat, VA; MeadWestvaco (MWV) Corp. of Richmond, VA; Packaging Corporation of America (PCA) of Roanoke and Richmond, VA; Carded Graphics, LLC of Staunton, VA; Triad Packaging Design & Display of Bristol, TN) participated and discussed the future of the VT-Packaging program and Packaging Summit conference.

Mr. Murry Pitts, CEO of Carded Graphics, LLC, was selected as an Interim Chair of the Industrial group for the packaging summit. He will coordinate the 2012 Packaging Summit along with the VT-Packaging team. "The Packaging Summit should be fun and we must invite more people, more students, and more interesting speakers in cooperation with VT faculty. This meeting must be global and international beyond Virginia. We will grow together with the Virginia Tech packaging program which will lead the packaging society," said Murry Pitts. The meeting was very interactive and productive, and finished with prominent outputs. Right after meeting, some attendees joined the 2011 CNRE job fair held at Cheatham Hall.



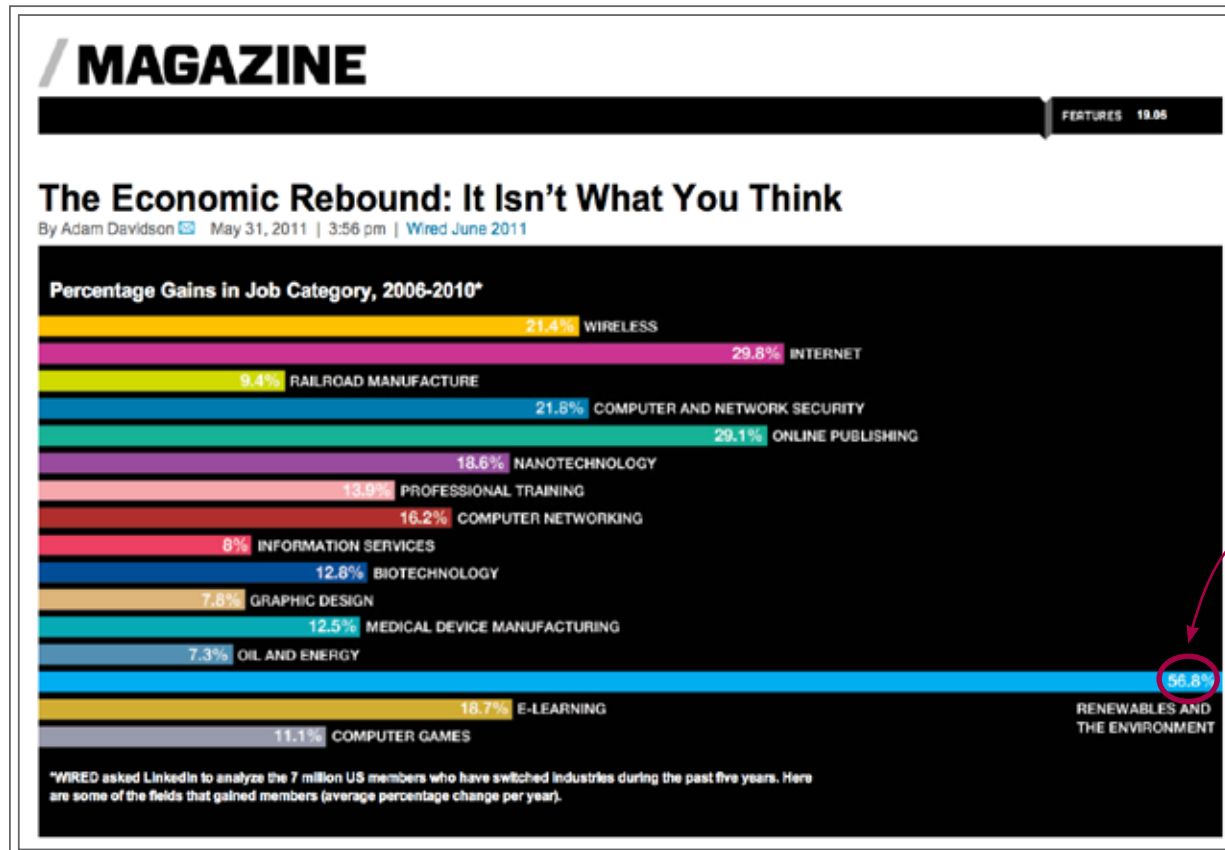
Paul France (Vice President of MWV of Richmond, VA, left) and Dr. Barry Goodell (Head of the WSFP department, right) attended to the 2011 CNRE Job fair at Cheatham Hall right after the preparative packaging summit meeting was over.



Global leading packaging industry came to Virginia Tech to discuss about the future of VT-Packaging and 2012 Packaging Summit conference.

Where is the Fastest Career Growth Projected?

The table and the graph below highlight the importance of the Department's educational efforts in "renewables and the environment". Both [WIRED Magazine](#) (7 million surveyed), and [IBIS World Industry Reports \[PDF\]](#), indicate that Sustainable Building Materials and Renewable Materials are where career growth will be occurring. Despite the economic downturn, we anticipate strong growth in this area, and even stronger demand for our graduates from the department.



WIRED Magazine
May 31, 2011
RENEWABLES
AND THE
ENVIRONMENT
Almost DOUBLE
the career growth
of any other field.

10 Industries with the Fastest Wage Growth Forecast

Industries	Total 2011 Wages (\$ billion)	Wage Growth 2011-2016 (%)
Sustainable Building Material Manufacturing	8.295	22.7
VoIP	1.510	16.3
Remodeling	13.571	15.0
Home Builders	66.426	14.9
Investment Banking & Securities Dealing	20.895	14.1
Commercial Building Construction	87.436	12.1
Correctional Facilities	10.668	8.7
Remediation & Environmental Cleanup Services	5.270	7.9
Environmental Consulting	9.295	7.6
Generic Pharmaceutical Manufacturing	5.617	7.4

SOURCE: WWW.IBISWORLD.COM

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

*Similar to Packaging System & Design request

Mechanics/Sustainable Structures	Teaching Purpose	Short/Long Term Need
MTS controller and data acquisition system	Current system no longer supported by MTS; WOOD 3314, WOOD 2554, WOOD 1234, other classes conducting testing	Short
12 Stereo Microscopes	WOOD 1234, special study; provide more student access to microscopes	Short
Dual Axis Force Plate (2)	WOOD 3314, WOOD 5324; physical demonstrations, biomechanics,	Short
V20 Nail Kicker by Reconnix (2)	WOOD 3324, Deconstruction; disassembly of wooden structures, preparing bioenergy sources	Short
High End (Ergonomic) Safety Harnesses (2-4, possibly different brands, quality)	WOOD 3314,WOOD 4984 (DWS), safety training; demonstrate use/quality of different safety harness	Short
Vermeer HG200 Portable Grinder	WOOD 3324, Deconstruction, Bioenergy generation source	Short

Packaging Systems & Design	Teaching Purpose	Short/Long Term Need
3D Scanner	Accelerate the primary package and product design	Short
Texture analyzer and/or MTS 250 lbs load cell	Testing various mechanical properties of packaging products and contents	Short
Rapid Prototype maker	Rapid prototyping and primary packaging design concepts	Short
Gas Permeability Tester (O₂, H₂O, CO₂)	Studying the interaction between packaging materials and products	Short
Digital printer	Package design concepts, printing and labeling studies	Short
Bench top Extruders (single/ twin screw type for casting or blown film)	Primary units for Packaging polymers and production areas	Short
Digital Micrometer	Measuring the thickness	Short
Vacuum sealer	Producing Vacuum packaging system	Short
SolidWorks CAD program	Accelerate the product design	Long
Controller for the vibration table	The current controller barely works	Long
Hot seal maker	Study of sealing effect of packaging materials	Long
UV/Visible/Fluorescent/ Chemiluminescent spectrometers	Designing smart packaging sensor for Food packaging	Long
Melt Index/Rheometer	Understanding of viscosity of plastic polymers	Long
Colorimeter	Measuring the optical transparency	Long
Bench top Injection /Blow molding machines	Understanding of rigid plastic packaging productions	Long
Newer HPLC/ GC-MASS spectrometer	Analyzing various physical properties of packaging materials and system	Long
DSC/DMA/TGA/TMA	Understanding of thermal properties of packaging materials	Long