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INSIDE VT WOOD

Reminder...

Remember to submit department news items by Friday 3 p.m. of each week to Will Pfeil at wpfeil@vt.edu for inclusion in Inside VT WOOD each Monday morning. All past issues of Inside VT Wood reside on our department website under the publications link.

News From Paul Winistorfer

- A very special thank you to Dr. Bob and Ester Youngs for their very generous gift toward our 'Building Our Future' campaign. Bob and Ester have gifted us with stock that will be sold and deposited in our account. Their \$5,000 contribution is very generous and much appreciated as we move forward in our campaign for building funds. Thank you Bob and Ester for your continued support and involvement in our program! Our public campaign will begin in January 2008 with the lofty goal to secure significant private funds for this project to build the leading infrastructure in North America. Have you made your contribution to 'Building Our Future'? Take time to do it today and reap end of year tax benefits.
- Our Graduate Student Spotlight this week is on Richard Johnson, PhD candidate working under the guidance of Drs. Zink-Sharp and Glasser. Richard is studying functionalized fibrillated celluloses from TEMPO-mediated oxidation. All past Graduate Student Spotlights are now shown on our website under our [Graduate Student](#) link.
- Thanks to everyone for helping out with our fall clean up last week. Thanks to Bob Wright for coordinating.

First WoodLINKS USA Site in Virginia Established in South Boston

The first WoodLINKS USA sanctioned site in Virginia has been established in South Boston, Virginia in a joint partnership between the Southern Virginia Higher Education Center and Halifax County Schools. The site license was supported by Morgan Lumber Company of Red Oak Virginia, Halifax County Schools, The Halifax Education Foundation, Southern Virginia Higher Education Center Foundation, The College of Natural Resources at Virginia Tech, and the Department of Wood Science and Forest Products at



Virginia Tech. The Higher Education Center is currently searching for an instructor to deliver programming for Fall 2008 at the Center, in conjunction with the partners in this project. Infrastructure improvements and equipment will be purchased for this site in the coming months.

Shown in the photo (page 1) at a recent Southern Virginia Higher Education Center Board meeting, and in recognition of support in establishing the first WoodLINKS site in Virginia are (L-R) Mr. Wayne Conner, Halifax Educational Foundation Chairman, Dr. Paul Winistorfer, Department of Wood Science and Forest Products at Virginia Tech and President, WoodLINKS USA, Amy Lammerts, Director of Programs at the Higher Education Center, Paul Stapleton, Superintendent Halifax County Schools, and Mr. Ken Morgan, President Morgan Lumber Company Red Oak, Virginia.

A second WoodLINKS USA site is being planned and will soon follow at Danville Community College as a partnership between Danville Community College and Danville Public Schools.

YMCA Asks Packaging Class to Redesign Book Donation Process



Front Row: Sharon Thompson (YMCA), Sandy Bosworth (YMCA), Jonathan Pace

Back Row: Ryan Anthony, Tim Coplan, Daniel Andrews, Ralph Rupert (Instructor), Gail Billingsley (YMCA), Jennifer Dvorsky, Alex Hagedorn (Instructor)

The Packaging and Materials Handling Class studies basic warehouse design and the interaction of the unit load as it is moved through the distribution system. The YMCA asked the class to help redesign the book donation process. The class presented a new sortation/storage system developed using basic warehouse theory during the Wednesday Graduate Seminar class to representatives of the YMCA. The sale of books brings in approximately \$70,000 annually for the YMCA. The class broke down the book donation process into a classic warehouse system of receiving, storage, order picking, and shipping. Bottleneck areas were identified, which, when removed, would improve the flow of the books through the system. The new system should significantly improve the organization in the book sorting area, reduce book handling, and increase book sales capacity at the YMCA Thrift Store.

A previous class project assisted the YMCA in developing an improved sortation and stocking system for their many donations, especially clothing, as they moved from the Gables store to the new store on N. Main St. The improved system allowed the YMCA to handle more donations in less sorting space while making more room for sales.



Richard Johnson, Ph.D. Candidate

I am Richard K. Johnson, Ph.D. student in the interdisciplinary Macromolecular Science and Engineering Program, of which the Department of Wood Science and Forest Products is part. I was born and raised in Ghana to Cdr. Abraham Johnson (Ghana Navy) and Margaret Johnson. The middle initial “K” in my name stands for Kwesi, which is the name given to males born on Sunday. Other days of the week have corresponding names for both sexes.

I had my primary, secondary and tertiary education (bachelor’s degree only) in Ghana. I got my bachelor’s degree in Natural Resources Management, specializing in Wood Science and Technology at the University of Science and Technology, Kumasi, Ghana. In Ghana, research and thesis writing are graduation prerequisites for most undergraduate programs. For my undergrad research, I investigated logs to lumber conversion efficiency in a sawmill and completed my program in July of 1998. After three years employment in the chemicals management division of Ghana’s Environmental Protection Agency, I applied for and entered VA Tech Wood Science Program to begin my masters.

My master’s research at Tech centered on fabricating and characterizing cellulose and wood fiber reinforced composites using the process of wet-laying (similar to papermaking). The exposure and hands on experience I acquired working through this research was a significant leap from my previous academic experience. This work won second place in the 2005 Wood Award Competition organized by the Forest Products Society, and efforts to publish the findings in a composites journal are far advanced. After completion of my masters (July 2004), my advisers Profs. Zink-Sharp and Glasser offered me the opportunity to enroll in the Ph.D. program. Considering the rich and exciting academic and social experiences I had enjoyed during my two years at Tech, this opportunity was hard to resist.

Currently, I’m researching in conversion of cellulose fibers (from wood source) into biodegradable / biocompatible nanofibers. Cellulose nanofibers (measuring close to a billionth of a meter in diameter) have a wide variety of applications in medicine, pharmacy, food, paper and board, cosmetics, etc. More specifically, I’m applying chemical treatments that ease conversion of wood pulp to nanofibers, which will then be utilized for further research.

Outside the classroom and lab, I enjoy biking on the Huckleberry trail as well as playing racquetball with friends. Generally, I’m more an indoors kind of guy especially during winter. I spend my Sunday mornings in church and enjoy studying the bible.

After graduation, I intend to pursue a challenging career in bio-based materials research and development. I eagerly look forward to entering the world prepared to solve real-life problems with the many skills (mental and practical) my participation in the VA Tech Wood Science Program has imparted to me.

Wood Products Operations Management Students Present Final Project Nov. 29, 2007

Students in Professor Earl Kline's Wood Products Operations Management (WOOD 4624) conducted value stream audits of local manufacturing facilities for their final class project. The final reports were presented in class to students, faculty, and the business managers of the facilities that hosted the student projects. The value stream audits included studies and evaluation of inventory operations, production work flow, quality, communication, and safety. Many thanks go to CMI Craftmaster, Universal Forest Products, and the Wood Enterprise Institute for hosting these projects.



L-R: Chris Joseph (UFP), Daniel Watson, Keith Horn, Josh Turner, Scott Weeks (UFP), Chris Gaidrich (UFP), and Adam Hutchison. Universal Forest Products sponsors give an "A" for the students' presentation. The question on the students' minds is if Dr. Kline agrees with this assessment.

Students Test Coffee Stir Stick Bridges

By Bob Wright

Mechanical Properties of Wood I (WOOD 3315) students tested their wooden coffee stir stick bridges Friday 30-November in the Wood Engineering Lab at the Brooks Center. As an aspect of learning about truss design, students (typically working in teams of two) sketch and discuss revisions, then design at full scale a truss of their own choice within the design criteria.

Design strength data comes from a data base which is gradually increasing in size as each year additional test results can be added. Based on the student's analysis and the component strength data they are to predict the maximum load at failure for their truss design.

To make the design project more enjoyable and entertaining, the team is required to make two identical trusses and join them into a small model bridge. The concept of 'diagonal tension counters' is reinforced.

As an introductory course, students do not learn the details of load transfer through structures and in fact primarily work in two-dimensional systems. The opportunity to explore three dimensions and the hands-on craftsmanship has always received positive feedback from the students for this 3315 bridge project.

This year the gap between prediction and actuality was closed to a +7% difference (relative to the predicted load) by the bridge designed and built by Adam Scouse and Matt Black. Theirs was also the strongest bridge tested built to the class design specification. They predicted a maximum load at failure of 332 lbs and the actual failure occurred at 357 lbs.

The second most accurate prediction was a tie between the bridge built by Jonathon Pace and Daniel Fore (predicted 296 lbs, actual 245 lbs; -21%), and a second attempt by 3315 students from 2006; Jesse Paris and Josh Hosen. After their bridge did not perform to their design specs last year, they repaired and modified it for retesting this year. Their prediction was 285 lbs and their actual this year was 233 lbs (-22%).

The bridges will be on display at the Bollo's Coffee Shop on Draper Avenue next semester. Bollo's is used because the sticks are purchased there.

Jonathan Pace and Instructor, Bob Wright discuss where they think the bridge will fail.



Adam Scouse and Matt Black set up their bridge for load testing.

Virginia Tech Business Technology Center Offers Business Assistance

If you are working with industry in our state remind them that the VT Business Technology Center offers assistance to businesses. There is also a satellite office in Martinsville serving Southside. Make the most of Virginia Tech resources to help our industry.

The Virginia Tech Business Technology Center (BTC) helps emerging and evolving technology-based businesses assess and quantify their business opportunities. It is a resource available to entrepreneurs and businesses throughout Virginia; and is part of Virginia Tech's statewide economic development support activities. All work done by the BTC is kept confidential to the client.

Typical BTC studies include:

- Market Research
- Market Opportunity Assessment
- Competitive Analysis
- Market Strategy Development
- Business Plan Development
- Financial Modeling and Pro-Forma Development

The Southside Business Technology Center (SBTC) in Martinsville, VA, maintains a close partnership with Virginia Tech's Business Technology Center, the Pamplin School of Business and the Office of Economic Development at Virginia Tech. The purpose of the SBTC is to promote economic development in Southside Virginia.

Professor and Department Head, Department of Forestry – Position Available

The position of Professor and Department Head of the Virginia Tech Department of Forestry is available and the search has begun. Please see the web resource site established for this important leadership search in our college:

<http://www.forestry.vt.edu/searchresources>

Lunch and Learn program

Lunch and Learn program to begin in January. Beginning in January the department will host a once-a-month 'Lunch and Learn' informal brown-bag lunch program. This is not a formal seminar program – but an opportunity to put topics on the table for anyone in the department to participate in. Volunteers are needed to lead a discussion on a topic of your interest for each month during the spring.

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