

CMEC Alumni & Friends Newsletter

Tom Maloney, Editor
Judy Edmister, Associate Editor

Comments from the Editor



Tom Maloney

As you know, all universities are in tumultuous economic times and WSU is no exception. Suffice it to say, compared to the rest of the university the Laboratory did well in the final analysis of the budgetary issue. The other big news is the establishment of the Composite Materials and Engineering Center (CMEC). Following is the official statement of the founding as presented in the new website. Please be sure to change your bookmark for the WMEL www.cmec.wsu.edu. Here is the statement from the new website:

"The Wood Materials & Engineering Laboratory at Washington State University has a long and illustrious history in wood composite materials, design and construction. Since its founding in 1949, the scope of the research, outreach and education programs of the laboratory has expanded beyond wood materials to include other natural fibers, polymers, inorganic cements, masonry and steel. In addition to materials engineering, we are extensively involved in developing standards, building codes and design methodologies for these wide-ranging composite material systems. To address this broader mission, the WMEL is now part of the Composite Materials & Engineering Center (CMEC). This new organizational structure more accurately reflects the complete scope of our programs."

Please visit our new website and change your bookmarks to www.cmec.wsu.edu.

This new organization officially centralized all of the above noted research endeavors. All of these have been a part of WMEL over the years but it was not recognized widely either within the university or outside of the university. Congratulations are due to Director Don Bender and the rest of the staff in establishing this new center.

In the last issue the Alumni Spotlight was put on Jon Martin. We were late in getting a good photo from Jon and Jan Martin, but we have one now and it follows on page 5, Alumni, Staff and Friends News.

Alumni Spotlight: Roy Adams

Roy was our first student enrolled in the new Material Science and Engineering Program. He has provided us with information on his career following. Needless to say, Roy is another one of our outstanding graduates. And the Editor feels really old realizing that Roy is also retired as of now.

Where oh where did the time go?

Roy and his wife, Fiona, are delightful people. They were great to have here in Pullman many years ago. Both are from the United Kingdom and Fiona's mother is still doing OK at her home in Scotland. Their daughters who were very young in Pullman are thriving. Lynn and her husband John are in Wisconsin and Alison and her husband Joe are in Minnesota. Joe is active army and has already served twice in Iraq.

As Roy says in the following, he will be having hip surgery. The same surgeons who performed surgery on the Penn State football coach, Joe Paterno, will do Roy's hip surgery. He feels he is in good hands as nobody does harm to Paterno. Now to Roy's career.

Roy was born and lived in the South of England through High School. He then left home to pursue a degree in Forestry at the University of Aberdeen, Scotland, getting as far away from his parents as he could! While in Aberdeen he met and married Fiona who was studying to be a Physical Therapist. While working on his degree he realized that he was more interested in the utilization of trees rather than growing them. To follow this dream he and Fiona immigrated to Canada and Roy earned his Master's degree at the University of British Columbia (UBC) in 1969.

Roy was accepted for a PhD program at UBC but felt he needed more experience and left for a temporary position



Roy and Fiona Adams

Alumni Spotlight: Roy Adams, cont'd

at the University of Idaho (UI). His thesis at UBC had involved working in Nondestructive Testing using acoustic emissions to measure crack growth in wood. He became familiar with the work done at WSU and particularly the work of Roy Pellerin. The proximity of WSU and UI was a major factor in the decision to move to the area.

It was at this time that WSU decided to make the Wood Technology group part of an academic department and to begin offering degrees in Materials Science and Engineering. In preparation for a faculty role Roy Pellerin enrolled for a Master's degree at UI, and Roy Adams was on his committee. When Roy's temporary position at UI ended, he was accepted as the first student into the WSU wood engineering degree program. George Marra was his major professor. As the only student it was a bit lonely but Roy found fellowship and time to play chess with Tony Nilson, usually at lunch times. Often games went longer than this and it was then a challenge to hide the board from George Marra, which they did successfully most of the time!

Roy accepted a position at the Institute of Wood Research, Michigan Tech University in Houghton before completing his thesis (big mistake). At IWR he worked with a team to develop high strength wood composites and preservative treated wood composites. He eventually completed his PhD from WSU in 1981. After spending ten years at IWR he was hired as the Associate Director for Wood Products at the new Natural Resources Research Institute (NRRI) in Duluth, MN.

Fiona had said she wanted to move south and west from Houghton; Roy assured her that Duluth met those requirements! Upon reaching NRRI Roy found that he was also responsible for research in peat, and renamed his group BioProducts. He spent a successful ten years in Duluth working closely with the wood and peat industry and leading up to 25 people. A major accomplishment was convincing Potlatch Corp that their old composite panel pilot plant would have a good home in Duluth. A further achievement was hiring WSU graduate, Brian Brashaw, and working with WSU graduate, Bob Ross, on several projects.

In 1995, Roy was hired by Penn State University as their wood products extension specialist and he spent five years working with the wood industry throughout Pennsylvania. He then worked as a consultant for several years and moved into semiretirement with a change of career into website design. About two years ago he fully retired but finds he is as busy as ever. His primary project is working for Centre Volunteers in Medicine (CVIM) a group that provides medical and dental services for lower income people without health insurance. He works on their website and is Chair of the planning team for a major fundraiser for CVIM. He is also very active in Rotary.

Roy and Fiona have two daughters, Lynn, born in Canada, and Alison, born in Moscow, ID; and five grandchildren ranging in age from 17 to 4. Fiona retires this summer and one of her first duties will be as chauffeur as Roy will undergo hip replacement surgery in August. Next year they plan to travel, play golf and volunteer. Travel plans include a west coast trip: for folks in the east, Pullman is the west coast!

Editor's note: If Roy and Fiona do make it to Pullman, I urge all graduate students to visit with them and learn from their great experiences and careers. It would be well worth your time.

Graduate Student Spotlight: Amy Chen



Amy Chen

In this issue, we are introducing you to Feng (Amy) Chen. She is a PhD candidate in the Materials Science Program. Her home town is Liaoyang in the province of Liaoning in the People's Republic of China. She earned her B.S. degree in Materials Science and Engineering at Dalian University of Technology. Her father is factory director of a small local company while her mother takes care of the home front.

Amy's undergraduate work highlighted metals but she wanted a solid education in polymers that lead her to WSU. The polymers program at WSU is over 40 years old but had faded a bit until recently because of faculty retirements. It is now flourishing once again and the strong faculty and access to modern equipment were critical factors in her choosing WSU. She has been at WSU for three years and hopes to complete her PhD within a year.

Over the years, polymers have been an integral part of the WMEL experience. While Amy's work is not directly in the wood products area, the editor's view is that much of her work contributes to possibilities in the wood products field. Following is some basic information on her work to date and the research she is pursuing for her PhD degree.

Her dissertation is on soy protein (SP)-based bioplastics. This is an important area of development as products made with such material are biodegradable. Microsoft, for example, is one company that has changed the plates etc. and utensils in their main campus cafeteria to biodegradable ones. According to newspaper reports this has resulted in cost savings,

(Continued on page 3)

Graduate Student Spotlight: Amy Chen, cont'd

and the dining materials are compostable. However, there are problems with the utensils breaking upon use. Amy's basic research may have the answer to this problem. Her proposed research program is entitled "Approaches for Morphology Control and Performance Enhancement of Biodegradable SP Blends."

The main objective of her research is to develop cost effective and high performance SP-based bioplastics through manipulating the phase structure of multicomponent soy protein blends. She is blending SP with biodegradable polyesters, such as poly(butylene adipate-co-terephthalate) and poly(lactic acid) (PLA), and investigating the properties of the resulting blends. This research should demonstrate that SP can function either as filler or as plastic during blending through controlling the moisture level in the soy protein. When SP behaves as a plastic, the resulting blends demonstrate significantly higher mechanical properties than when it behaves as filler in the blends.

So far, as first author Amy has published two papers in quality polymer journals. In her first paper, Amy studied the effect of water content in the pre-compounding SP on the domain structure of the SP phase in the resulting blends, and revealed the formation of percolated SP structure at certain levels of water. This is a very important finding in SP bioplastics, because SP is usually processed elsewhere as filler rather than as plastic for blends. Amy's study suggests that it is advantageous to blend SP as plastic for high strength and modulus. In the second paper, Amy investigated performance enhancement of PLA /sugar beet pulp (SBP) composites by improving interfacial adhesion and penetration. The main objective of this research was to maximize the incorporation of the low cost, fiber-rich agricultural residue (SBP) in PLA bioplastics while largely retain-

ing the high strength of the neat polymer in the products.

Amy is also a co-author in a book chapter with Dr. Zhang and a co-author in two other peer-reviewed journal publications. An example of research in which she has been a major contributor was the development of PHBV (poly(3-hydroxybutyrate-co-3-hydroxyvalerate))/Bamboo Fiber Composites. (Editor's note: I want all readers to let me know if they understand this chemistry). The main research concept was that quality short natural fibers with an appropriate level of L/D (length/diameter) ratio and fineness could not only stiffen but also strengthen and toughen the polymer. The bamboo fiber reinforced PHBV composites displayed significant increases in tensile/flexural modulus and strength as well as impact strength. In contrast, many other short natural fiber/polymer composites often exhibit decreases in tensile strength and toughness.

While her research is primarily in polymers, the Editor can visualize the applications in the wood industry using her fundamental research. Possible use in wood plastics comes to mind immediately. Another area for possible use is in packing materials of wood plastics that would take the place of the Styrofoam type materials now used for shipping instruments, televisions, computers, monitors, sound equipment and many more items. What to do with the mountains of Styrofoam is a huge problem. Having a sturdy biodegradable packing material would be a tremendous step forward in reducing the waste we now have.

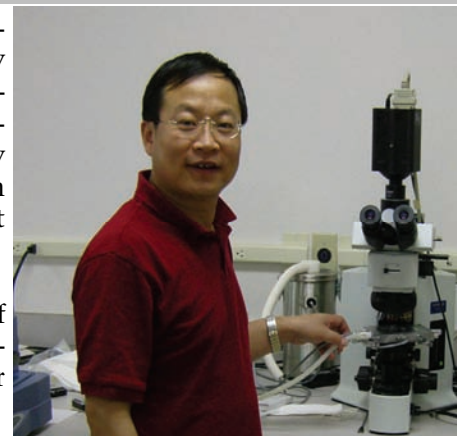
Amy has already received numerous awards and scholarships for her work. Once she graduates she would like to be a fundamental researcher either in industry or academia. In the Editor's view, she is well on her way to an outstanding career in either area of professional work.

Faculty Focus: Jinwen Zhang

In the new organizational structure of the Composite Materials and Engineering Center is the revival of the polymers program in which the WMEL participated in for many years. This revival has been going on for over five years under the leadership of Dr. Jinwen Zhang. The word "revival" is now passé as the program is in full and greatly successful operation. The Editor, as also the Emeritus Director of the WMEL, is extremely pleased that the polymeric program is back and doing well. As the previous Section Head of the Polymers program, R.V. Subramaniam, would often say, wood itself is just a giant polymer.

Dr. Zhang comes to WSU through his undergraduate work at the Suzhou Institute of Silk Textile Technology, his master's work at the Technology of Fine Chemicals at Dalian University of Technology (both schools in China) and his PhD work in Polymer Science at the University of Massachusetts, Lowell.

He arrived at WSU in 2004 and has been a faculty member of the WMEL ever since. He is also a faculty member of the Materials Science Program and an affiliate faculty mem-



Jinwen Zhang

Faculty Focus, cont'd

ber of the School of Mechanical & Materials Engineering, the Department of Biological Systems Engineering, and the Department of Chemistry. His expertise spread among several departments is emblematic of the long history of WMEL faculty members.

Zhang has gained extensive research and development experience in polymer materials from both academic and industrial environments. He is an expert in biobased polymer materials. His research interest lies in the areas of new biobased polymer material synthesis, processing and applications. Zhang has conducted active research programs, receiving competitive grants from the U.S. Department of Agriculture, the U.S. Department of Energy, the United Soybean Board, the Washington Technology Center and other state agencies. His research has been well received from his peers as reflected in the increasing numbers of citations of his publications and the many invited presentations at national and international professional conferences in recent years. Zhang is currently supervising one research faculty, two post-doctoral research associates, five doctoral students and one master's student. Full details of his curriculum vitae can be found on the Center's website.

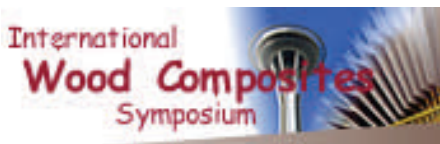
Jinwen and his wife have three children. He was attracted to WSU because of the professional opportunity, the excellent

work environment, and the freedom to pursue important fundamental and applied research. He is very interested in targeting his research on current problems.

To the Editor, the most exciting part of his research is developing new polymer materials or new applications from renewable resources. For example, Zhang's group is investigating a novel wet spinning method of soy protein-based fibers and developing a foaming technology for soy protein blends. Starch as feedstock for bioplastics and chemicals has also received extensive study in Zhang's group. For example, one U.S. Department of Agriculture sponsored project is on the synthesis of waterborne epoxy curing agents using starch and its derivatives. Jinwen Zhang's group has also made a novel and creative utilization of rosin for the synthesis of biobased epoxies and curing agents. His work will reduce the amount of polymer materials coming from petrochemical resources.

Jinwen Zhang is a very welcome addition and valuable member of the new Center and old WMEL. He has already demonstrated his great ability and leadership. Whenever any of our readers visit WSU please make it a point to introduce yourself to Dr. Zhang.

2009 International Wood Composites Symposium Highlights



The 2009 International Wood Composites Symposium & Technical Workshop held its 43rd annual event March 30-

April 1 in Seattle, Washington. "As the industry looks for new direction in the current economic situation, it is critical to participate in forums such as this to network and gain insight into the latest developments," said Symposium co-chair Vik Yadama of Washington State University's Wood Materials and Engineering Laboratory, which has sponsored the symposium for 43 years. Bob Tichy also serves as co-chair.

The three-day Symposium and Technical Workshop included 33 presentations on natural fibers, biological conversion of fiber for composites, integrated biomass technologies, thin-MDF and fiber insulation board technologies, role of life cycle analysis, wood recycling technologies, VOC control technology, alternate resination system for fiberboard, lightweight panel technology, specialty wood-strand composites, new ways of *in situ* monitoring during processing, and bamboo-based composites.

This year's Distinguished Service Award was presented to Wolf-Gerd Dieffenbacher, President and CEO of Dieffenbacher, in recognition of his significant contributions to the

wood panel industry. The Dieffenbacher group, headquartered in Eppingen, Germany, consists of 18 companies worldwide and provides innovative press lines and process technology for the composite panel, automotive, plastics, and components industries. Mr. Dieffenbacher also gave the keynote speech, which addressed "The wood panel industry in crisis - Any optimism justified?"

Other speakers included Lynn Michaelis, Vice President, Chief Economist for Weyerhaeuser, who provided information on the economic and wood composite panel market outlook; and Shobhan Mittal, Director of Greenply Industries in New Delhi, who discussed the status of forests and the composite panel industry in India along with potential markets and applications.

The Symposium also featured a Technical Forum poster session and a variety of social events to provide networking opportunities. Social event supporters included Dieffenbacher, Flamex, GreCon, Metso, and Siempelkamp.

Copies of the 2009 Proceedings on CD-Rom may be purchased from the Forest Products Society at www.forestprod.org or 608-231-1361. Information on the 2010 Symposium will also be posted soon at www.woodsymposium.wsu.edu.

Alumni, Staff and Friends News



Joe Fyie

Bob Tichy and Joe Fyie—In the last issue we reported that these two long-time friends and alumni took another one of their summertime motorcycle trips. This one was to Alaska—all the way to the Arctic Circle. There were rumors that the Laboratory staff had a pool going betting on the travelers and the grizzly bears betting on who would win out on the trip.

Joe reported that they did indeed get to the Arctic Circle but they also went much further north all the way to the Arctic Ocean at Prudhoe Bay, Deadhorse, Alaska. As proof he sent a photo showing his GPS reading. I am convinced that they got to the Arctic Ocean but I wonder if it was because they were trapped by the grizzly bears at the Arctic Circle and were forced to go further north to avoid them. It probably was a bad move as they now had polar bears to contend with. At any rate they avoided all of the bears and made it back home safely.

Marie-Pierre Laborie and Eric Jessup (Asst. Professor, WSU School of Economic Sciences) introduced their son Léo Michel Laborie-Jessup, born on April 20, 2009. 4.2 kg and 53.8 cm (9 lbs, 3 oz and 21 in. long) of health and happiness. Our congratulations to them.



Pat Smith was recognized with a Staff Excellence Award at the annual College of Engineering and Architecture convocation in April. Congratulations, Pat—we appreciate your hard work and dedication!

Melissa King received the annual Outstanding Teaching Assistant Award from the College at the April convocation.

Janet Duncan received a 20 years of Service Award, also at the convocation.

Brian Brashaw writes with the following update on his career and family:

Brian graduated from WSU/WMEL in 1991, and is currently project leader at UMD NRRRI [University of Minnesota Duluth Natural Resources Research Institute], serving industry in applied research focused on nondestructive evaluation technologies, lean production systems, product and process

development, and industry outreach. Brian is now on the organizing committee of the International Nondestructive Testing of Wood Symposium Series, along with WMEL Alumni Bob Ross and Roy Pellerin.

Brian has been married to Susan since 1991, and they have a son, Cole, a 6th grader, and a daughter, Hannah, in Kindergarten. In his spare time Brian coaches youth baseball (Little League) and basketball, and enjoys wilderness canoeing in the Minnesota Boundary.

The Pellerins—On the last day of the annual Pellerin Mexico trip, **Patti Pellerin** slipped and fell, breaking her leg. She had great medical treatment in Mexico and is recovering very well.

Tony and Phyllis Nilson. Tony had shoulder surgery recently. The surgery was successful and Tony is still his happy-go-lucky self. Phyllis was very recently diagnosed with what they thought was a cancerous kidney. After surgery, the pathology report showed two rare tumors but they were not cancerous. She is doing well and is getting out and about already.



Jon and Jan Martin

A photo received from Jan earlier this spring.

Got photos to share?? Email them to Judy at edmister@wsu.edu.

Who (besides Tom Maloney) can name these two “super assistants”?



Where are they now?

Time flies for us old retired people. It seems that **Tony Nilson** just retired but in fact Tony retired in early 1999. He spent the next 1-1/2 years sleeping in while his wife, Phyllis, continued to rise early and go to work. Then, Phyllis retired, after nearly 31 years as Library Specialist and Supervisor for the WSU School of Music and Theatre Arts. Tony's retirement was over! Editor's note: Thanks to Phyllis for contributing the following news:

As many retirees will tell you, once you retire you are so busy you wonder how you ever had time to work! Projects have included: remodeling and selling the family home (we still live in Albion); remodeling and maintenance on a rental house in Pullman; upkeep of our mobile home park; helping Phyllis with her ailing parents, both of whom have since passed on. Tony also still serves on the Albion Planning Commission and has helped Phyllis with her various volunteer projects.

There are a lot of fun times in retirement also: annual trips to our time shares in Mazatlan, Mexico; serving as chaperones for the WSU Concert Choir for a European Tour; and several Boy Scout hikes and activities. Phyllis hiked in and out of Hell's Canyon one year with Tony's troop and only lost 3 toenails!

Tony has remained very active in the Boy Scout Program, primarily in the area of adult leadership training. In 2002 he was the Course Director for "Woodbadge", the highest level of leadership training offered adults. He has helped as support staff every year since, with Phyllis helping in the kitchen for couple of sessions. Camp Grizzly Boy Scout Camp also occupies a great deal of time. Tony is on the camping committee and helps design, build, repair, and patch whatever needs done. WMEL has contributed many supplies to these projects over the years. Some of them WMEL even knew about (keep your mouth shut Marty

Lentz). In addition to his previous awards, Tony was presented the "Golden Scouter" award by his district (Phyllis calls it the "Old Fud's" award-the Editor changed the word "Fud's" from the original wording), the Order of the Arrow Founder's Award, and the "J.H. West Heritage" award by the National Boy Scouts of America Organization. These awards are nice, but not what is really important: The work is FOR THE BOYS!

Most important has been our family. Our children are all married and each lives 300 miles from us in different directions so we are on the go a lot for visits and they also come here. With our two children, Lance & Tami, and Phyllis' older boy, Sam, plus four grandchildren, and one great-grandson there is a lot of fun to be had. We are blessed. We also have many visitors during the years for WSU events and, as lifetime members of the WSU Alumni Association, we love it.



Phyllis and Tony Nilson

Both Tony and Phyllis feel privileged and very fortunate to have worked in positions that they loved, that challenged them, and provided them with lifelong friendships. Come see us: "La Casa Nilson Bed and Breakfast" is always open if you can catch us at home!

The picture [at left] is from a birthday party for Tony in 2008. We are at Pancho's Restaurante by the Sea in Mazatlan, Mexico.

Lab Views—Then and Now



circa 1980



circa 2004—WPC extrusion line

Closing Comments by Don Bender



Don Bender
Director, CMEC

I would like to highlight two items in this newsletter. The first deals with an organizational change that is intended to position our program for future growth. The second is to introduce our acting director for this next academic year.

As Tom Maloney mentioned in his opening comments, the Wood Materials & Engineering Laboratory is now part of the Composite Materials & Engineering Center (CMEC) at WSU. The new organizational structure more accurately reflects the broad scope of our programs and helps attract more faculty and student involvement.

Our goal to provide sustainable solutions for the built environment will require us to embrace an array of materials and novel assemblies. The CMEC will provide a rich, interdisciplinary environment to conduct research, educate the next generation of leaders, and stimulate economic development. To learn more, we encourage you to visit our new website www.cmec.wsu.edu. To our alumni and supporters, the bottom line is that our commitment to wood materials and engineering is not diminished - instead we hope to leverage our success in wood materials and expand into other sustainable materials used in the built environment.

I will be going on sabbatical leave from August 2009 through May 2010. My plan is to study in the area of building physics. With the launching of our new *Institute for Sustainable Design*, it has become apparent that we need to develop new materials and systems that are not only strong, stiff and durable, but also materials with superior energy efficiency and hygrothermal properties. I am planning several trips to visit strong research programs in building physics in New Zealand, Germany, and the Oak Ridge National Laboratory in the US.

Dr. Dan Dolan, P.E. will be the acting director of CMEC during the next year. Dan is a professor of civil engineering and specializes in dynamic loading of low-rise structures. He conducts research on the performance of low-rise buildings when loaded by earthquakes, high wind, and vibration. Dan is active in transferring technology to the building and design codes in the United States and Europe. He contributes to the International Residential Code, International Building Code, Building Seismic Safety Council, American Forest & Paper Association, American Iron and Steel Institute, and Masonry Standards Committee. In addition to his teaching at WSU, he conducts continuing education seminars for building departments and professional associations around the country and was the lead author on the revision of *FEMA 232-Homebuilders' Guide to Earthquake Resistant Design and Construction*.



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