INTERNATIONAL ACADEMY OF WOOD SCIENCE

BULLETIN 2011-II

www.iaws-web.org/

December 2011

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MESSAGE FROM THE PRESIDENT

In taking over the responsibility as President, as of June this year, I must first extend my sincere thanks to Frank Beall who for the past three years has made an excellent job of furthering the activities of the academy. Frank will still contribute to the Executive Committee as Past President where he will focus on supporting member issues. I must also thank the outgoing Past President, Xavier Deglise, who has worked in the EC for many years, developing the Academy and especially in the last three years promoting our contacts in those regions of the world where wood science is less well represented. Uwe Schmitt, as new Vice President, will be a great asset owing to his long experience as Executive Secretary of the Academy. We are also very fortunate to continue to have Howard Rosen as Treasurer, John Barnett as "Publications Editor" and George Jeronimidis as Chair of the Board. I especially welcome Robert Evans as new Executive Secretary. I am very much looking forward working together with this team. It will be a challenge to follow the good work that Frank has done.

I was very fortunate to start my term as President with this year's annual meeting in Stockholm. The meeting was very well received and helped to broaden the scientific scope of the academy to include development of new materials from wood through co-operation with the Wallenberg Centre of KTH/Chalmers. This resulted in an excellent with many young scientists participating together with fellows. Such meetings will be of great importance in the future as young scientists are becoming more and more interested in entering the wood sector to explore the possibilities of wood as a source for renewable materials and energy.

In support of this trend, we have established the PhD award, the first of which was presented at the Stockholm conference. I would encourage fellows to promote awareness of this award among colleagues in order to get it well established.

In the future we aim to increase the visibility of the Academy in the wood science community and to incorporate the new disciplines developing in this area. For this reason I would encourage fellows to consider these newer areas of research in nominating new fellows for the Academy. I see it as most important for the development of the Academy that a bridge is built between traditional wood science and those in the fields of, for example, biogenetics and biopolymer material development.

We will also continue our efforts to develop further contacts with and involvement of those areas of the world that are sparsely represented among Academy fellows. In many of these countries wood industrial development is fast and may occur in isolation, partly due to language barriers. Therefore I would also encourage you to promote nominations of fellows from such areas.

The planning for future annual meetings of IAWS is on schedule, with 2012's meeting to be held in Zvolen, Slovakia, September 26 to 28. Fellow Babiak is acting as local organiser. For 2013 the plan is for a meeting in Kuala Lumpur arranged by fellow Hamami and for 2014 a meeting in Hamburg arranged by fellow Schmitt. As information becomes available we will update the webpage regarding these events; http://www.iaws-web.org/.

Due to the increasing costs of printing and the now well established methods for electronic distribution of documents, the EC is proposing to move to an electronic version only of the bulletin; this bulletin being the last one to be printed. If this poses problems for some fellows we would be very happy to know so that alternatives can be found. We would also be grateful if fellows could notify fellow Schmitt uwe.schmitt@vti.bund.de (responsible for the web-page) with regard to changes or errors in contact information, especially in updating e-mail addresses.

Finally I want to express my gratitude to the Academy for giving me the opportunity to serve and help in continuing to move IAWS forward.

Lennart Salmén, Stockholm

NEW VICE PRESIDENT OF THE ACADEMY - DR UWE SCHMITT

The Academy congratulates Uwe Schmitt on his election as Academy Vice President. Uwe has ably served the Academy as Executive Secretary since 2002 and was honoured as Academy Lecturer in 2010. He has been involved in the development of the Academy Website and in moving towards the production of the Bulletin in electronic format.

Professionally, Uwe is Acting Director of the Institute of Wood Technology and Wood Biology (HTB) of the Federal Research Institute for Rural Areas, Forestry and Fisheries (von Thünen Institute/vTI) in Hamburg. His research interests are in the fine structure of wood and wood composites, wood formation, wood discoloration, cambium dynamics and climate response in trees. He is a member of the editorial boards of the Academy Journal, Wood Science and Technology, and of Holzforschung and serves as Associate Editor of The IAWA Journal. He is a consultant to bilateral and multilateral aid projects involving technical cooperation

in South America, New Zealand and Korea. He has served as a national delegate to the management committees of European Union COST Actions E20 (Wood Fibre Cell Wall Structure), E50 (Cell Wall Macromolecules and Reaction Wood) and FP0802 (Experimental and Computational Micro-Characterization Techniques in Wood Mechanics). He is also a lecturer at the University of Educational Cooperation Mosbach

ANNUAL IAWS MEETING IN STOCKHOLM
31 AUGUST - 2 SEPTEMBER 2011

This year's meeting was on the theme of "Novel Materials from Wood or Cellulose" and was co-sponsored by Innventia AB Stockholm and the Wallenberg Wood Science Centre of KTH/Chalmers Stockholm, Gothenberg. The theme was particularly relevant since there is growing interest in using wood derived products as a future replacement for oil based products and it attracted a large number of delegates. In all 147 delegates came from 26 countries with a large number of fellows attending and giving keynote addresses.

The Academy Lecture was presented by the current Chair of the Academy Board, Fellow George Jeronimidis with the theme "Natural cellulose based hierarchies: concepts for novel materials and added functionality".

The other keynote lectures were given by fellows Antonio Pizzi (Wood welding and its applications in building and furniture), Philip Evans (Wood surface stabilisation and coating performance), Maija Tenkanen (Potential enzymes in the biorefining of hemicelluloses to value-added materials) and Hiroyuki Yano (Optically transparent cellulose nanocomposites – the transition of reinforcement from nanofibres to nanostructured fibres.

This occasion was also the first time that the academy presented its PhD thesis award which was given to Katherina Beck (Université Laval, Québec) for her thesis entitled "Development of new engineered wood products for structural applications made from trembling aspen and paper birch" (photograph below)

The subjects dealt with at the conference ranged from that of more traditional wood science to applications of nanocellulose fibrils in materials, hemicelluloses as barrier films, lignin utilisation for carbon fibres and welding of wooden structures without the use of additives. Altogether there were 42 oral presentations and 37 posters and many of these presentations are now available on the Academy Website http://www.iaws-web.org/.

As an organizer of this event it was particularly awarding to see the high level of interest from so many young scientists at this conference. Wood science is moving into a new era where a substantial proportion of energy and material resources will be derived from wood. In being part of this development we should though all reflect on the words delivered by fellow Yano in his key-note: In utilising wood components we should also make use of the large amounts of energy put in by nature in building up these structures.

Lennart Salmén
Conference organiser
President IAWS

ACADEMY LECTURE – Professor George Jeronimidis

George Jeronimidis is Professor Emeritus in the School of Construction Management and Engineering at the University of Reading, England. He is presently Chair of the Academy Board and presented the Academy lecture at the 2011 annual meeting of IAWS in Stockholm.

His current research interests cover biomimetics („The abstraction of good design from nature"), plant and animal biomechanics, smart materials and structures, mechanics of composite materials, design of composite structures and the application of biomimetic concepts to architecture. Biomimetic projects include developments of smart textiles, muscle-type actuators, integral strain sensors, impact-energy absorbing materials, natural fibre-based composites, development of cellular

materials from renewable starch sources, bio-inspired air-flow sensors. Composite-related projects include the design of smart, self-regulating composite wind turbine blades, friendly suspension systems for road and rail transport which minimize damage to infrastructure, design and development of composite flywheels for „hybrid“ urban mass transport systems. The abstract of his lecture is given below, and his PowerPoint presentation may be found on the Academy website
http://www.iaws-web.org/docs/2011-Stockholm/Jeronimidis.pdf.

Natural cellulose-based hierarchies: concepts for novel materials and added functionality

George Jeronimidis
Centre for Biomimetics, SCME, University of Reading, Reading RG6 6AY, UK

Cellulose-based hierarchies are among the most abundant polymer fibre systems in biology and in the world. All plant life depends on these composites for a wide range of functions needed for survival: load bearing structural performance, shape adaptation, movement, transport of water and nutrients, etc. The intrinsic physical and mechanical properties of the fibres (nano-fibrils, microfibrils) are one the reasons for their success. With an elastic modulus and a tensile strength which compare favourably with those of high performance technical fibres such as carbon and aramid in absolute term - and often superior when the lower density of cellulose is considered - it is not surprising that biology has arrived at a rich, diverse and successful range of design solutions using these fibres [1, 2]. The other reason, more relevant in the context of this paper, is the organisation of the fibres in many hierarchical structures covering an extraordinary range of scales, from 10-8 to 102 metres.

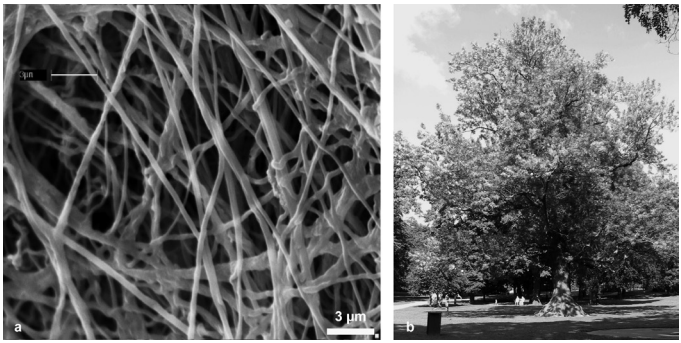


Figure 1. (a) Cellulose nano-fibres (scale bar = 3 µm; from www.cheme.cornell.edu);
(b) Tree in Stockholm park (15 metres high)

Plants represent a vast potential as renewable sources of high performance fibres, over and above the traditional use of wood, bast and leaf fibres, etc. In the past ten years there has been a great deal of scientific and technological progress is extracting cellulose nano-fibres from a variety of sources and this has been done in order to "capture" the intrinsic mechanical properties of the fibres which are "diluted" as hierarchies are built up. Compare the Young's modulus of a cellulose nanofibre, 134 GPa with that of wood along the grain, 10-15 GPa. However, there are many challenges in exploiting fully the properties of cellulose nanofibres. Being slender columns, they cannot carry loads efficiently in compression. As in the case of many polymer-fibre composites based cellulose, aramid and highly oriented polyethylene, micro-buckling results in very poor compressive strengths. In all situations which are not purely tensile, the properties of the matrix become critical, as does the bonding the fibres together. High modulus/high strength fibres require a reasonably stiff matrix in order to be able to "express" their high tensile properties. In other words the modulus ratio between fibre and matrix should not be too high otherwise reinforcement will require very high volume fractions of fibres which are difficult to achieve. A high performance fibre in a very low performance matrix is not a good composite system. The other aspects which present a significant challenge concern fibre orientation and fibre volume fraction. In plant cell walls the orientation and the volume fraction of reinforcement needed to achieve performance is the result of the bottom-up assembly of the cell walls. A composite with a two-dimensional planar distribution of fibres has a modulus of about one-third of the equivalent unidirectional system, dropping to about one-sixth if the fibres are statistically distributed in three dimensions [3]. Technical solutions for aligning cellulose nanofibres will be needed in order to benefit from the properties that the fibres can deliver.

The use of fibres for making structural materials offers a great deal of scope and flexibility in design but it also presents a few problems. Anisotropy of physical and mechanical properties and heterogeneity must be accepted and but also properly exploited in the design of composite materials. In biology this is extremely common and happens as a result of "growing under stress" [4, 5]. The magnitude and direction of the loads that the organism experiences as it develops provide the blueprint for the selective deposition of new material, where it is needed, how much is needed and in the direction in which it is needed.

The assembly of the fibres into more "efficient" hierarchies, at higher levels of scale than the sub-micron, requires compromises between different performance requirements such as high stiffness, high strength or high toughness.

HONOURS AWARDED TO FELLOWS

Dr Frederick Kamke

The first Wilhelm Klauditz Fellowship, awarded by the Fraunhofer Institute for Wood Research in Braunschweig, Germany, was awarded to Dr. Frederick Kamke, who is JELD-WEN Professor of Wood-Based Composite Science in the Department of Wood Science and Engineering at Oregon State University in Corvallis, Oregon, USA. The WK Fellowship includes a stipend to study at Fraunhofer-WKI. Kamke‘s research work at WKI during 2011 aims at improving the durability of wood-based panels in building applications. Multi-scale experimental methods enable a more efficient assessment of the development of new products. The results of his work will be published over the course of the year. The Wilhelm Klauditz Fellowship is awarded annually in the field of applied wood research. The Fraunhofer WKI funds top-ranking scientists who work on projects aimed at developing innovative natural materials. http://www.wki.fraunhofer.de/en.html

IAWS PhD AWARD 2011

Katherina Beck receiving the congratulations of the Academy and being presented with her award by President Lennart Salmén

The newly instituted award for the best PhD thesis in Wood Science was won by Katherina Beck of the Université Laval, Quebec.She was supervised by Alain Cloutier, Robert Beauregard and Alexander Salenikovich. She presented a paper based on her thesis at the meeting in Stockholm. Tthe abstract of the thesis is presented below.

DEVELOPMENT OF A NEW ENGINEERED WOOD PRODUCT FOR STRUCTURAL APPLICATIONS MADE FROM TREMBLING ASPEN AND PAPER BIRCH

Katherina Beck, PhD

ABSTRACT

Intense competition on the construction material market forces the engineered wood product (EWP) industry to produce high-performance materials at low cost. Any new product must not only outperform established products, it must also be more cost efficient. Costs can be kept under control by making minor changes to the manufacturing process in existing mills and by exploiting currently under-utilized species. Performance can be controlled by manipulating different manufacturing parameters that influence the mechanical and physical properties of the final product. For engineered wood products, these factors include species, strand geometry and alignment, resin, and pressing parameters.

The objective of this research was to develop a new oriented strand lumber (OSL) type EWP. To achieve this, a concept was developed for a laminated beam, using oriented strand panels made from species currently available in Eastern Canada. A pressing procedure was determined to obtain similar density profiles for aspen and paper birch. The influence of species, resin content, strand geometry, specific surface, and slenderness ratio were studied.

Generally, aspen panels outperformed birch panels when using the same production parameters. A higher resin content increased the internal bond, but did not affect the bending properties. Bending properties could be improved by using longer or thinner strands. The higher bending properties were therefore observed for panels made from long, thin aspen strands, with an average bending strength (MOR) of 66.3 MPa and a bending stiffness (MOE) of 13.5 GPa. It was shown that a comparable bending performance for both species could be achieved by using strands with a similar specific surface. Within a given species, maintaining the same slenderness ratio resulted in comparable bending properties, while increasing the slenderness ratio—i.e., using longer or thinner strands—improved performance.

Based on these results, laminated OSL beams were produced using long, thin aspen and birch strands panels. In addition, laminated OSB beams were produced from commercial web-stock material. Small scale 3-ply OSL and 4-ply OSB beams were tested in edgewise bending, with OSL yielding superior results. The average MOR and shear corrected MOE values obtained for aspen OSL (52.0 MPa and 9.9 GPa respectively) and birch OSL (58.4 MPa and 10.6 GPa respectively) put both prototypes comfortably within the range required to compete with similar engineered wood products.

NEWS OF FELLOWS

Mel Tyree

Professor Tyree is currently in China visiting with colleagues at the College of Forestry, Northwest A&F University. Mel was recently selected by the Central Government of China for an appointment at NWA&F as a Research Professor under China's 1000-talents program. This program is designed primarily to attract back to China successful, mid-career, Chinese scientists and engineers from western countries. In rare cases the 1000-talents program has been used to attract post-retirement western experts and Mel is among this group. The professorships commonly come with salaries that meet or exceed western rates and plus generous startup funds ($1.6 to 3.2 million).

Phil Evans

Arash Jamali, a Ph.D student working with IAWS Fellow Phil Evans in the Department of Wood Science at the University of British Columbia, Vancouver, Canada, received the Robert W. Stephens Memorial Award, including $US 1000, at the annual meeting of the Canadian Wood Preservation Association (Halifax, Nova Scotia, 4-5th October) for his paper on the „Water vapor plasma processing of wood" .

OBITUARIES

Professor Knut Lundquist (1932-2011)

In July, 2011, Professor Emeritus Knut Lundquist unexpectedly left the world of research, and his many colleagues and friends at Chalmers and the Department of Chemical and Biological Engineering. Professor Lundquist was to the very end active at the division Forest Products and Chemical Engineering despite bouts with health problems over a period of several years. Knut Lundquist's field was wood chemistry, but he was best known as one of the world's leading lignin chemists. He was 79 years old.

Knut Lundquist has, throughout his scientific life, had Chalmers as his base. He began at the Department of Organic Chemistry as a coworker to the legendary lignin scientist Professor Erich Adler. In 1973, Knut earned his PhD with a dissertation on lignin hydrolysis products and their relations to lignin structures. Later on, he studied different aspects of lignin reactions, the synthesis of lignin model compounds and the structural determination

of lignin structures using, not only NMR spectroscopy, but also X-ray crystallography. His applied research into forest products and lignin in biomaterial is extensive. This was reflected in the many forms of collaboration he had at the division for Forest Products and Chemical Engineering, which was his place of work in the most recent years.

One characteristic of Knut Lundquist was his broad collaboration in research internationally, nationally, as well as across department and division borders. His contacts took him to France, the USA and Japan. His research findings have been published in hundreds of articles, more than fifty of which in the classic Acta Chemica Scandinavica. The direction of his research as well as his collaborators in fundamental and applied chemical lignin research, both internationally and nationally, are documented in databases such as SciFinder.

As a scientist Lundquist was a model of critical thinking and accuracy and was often engaged to review scientific articles. He was awarded international honors as a wood and lignin chemist. Numerous students recall him as an instructor in courses in organic chemistry and natural products chemistry. To the very end he wisely advised and responded to questions, to the delight of many doctoral students. We, who had the privilege of working closely with him, also miss the Knut we knew with his crossword puzzles, his coffee cup and his sharp but well-meaning wit in the lunchroom, in the hallways and at the computer.

Göran Petersson, Harald Brelid, Hans Theliander, Ulf Carlson
The Department of Chemical and Biological Engineering, Chalmers University of Technology

Professor Jerzy Ważny (1927 - 2010)

Jerzy Ważny passed away on August 23rd, 2010, at the age of 83. He was born on 18th December 1927 in Boryslaw (near Lviv). He graduated from the Warsaw University of Life Sciences – SGGW, the Forestry Faculty, in 1950 with a master's degree in forestry phytopathology and wood conservation. He did his PhD at SGGW, the Wood Technology Faculty in 1959, and his post PhD degree at SGGW, the Forestry Faculty, in 1962. SGGW was the university to which Professor devoted most of his working time, and since 1993 he also started cooperation with the Wood Technology Institute in Poznan that became his main work place since 2000. Until 1998 he ran the Wood Protection Department at SGGW.

He was a very bright man and no less diligent. At the age of 32 he was nominated an associate professor and a few years later a professor. Since 1976 he was a member of the International Academy of Wood Science, since 1991 of the prestigious Polish Academy of Sciences, and since 1995 of the New York Academy of Science. His numerous publications and scientific achievements encompassed the whole wood protection area, with a special consideration given to the effect of home fungi (Basidiomycetes) on technical properties of wood, to the theory of mechanism and kinetics of biological corrosion, to methods of testing wood preservatives for their biological and physical and chemical properties (including drawing up of the first version of a set of 17 state standards and participation in drawing up of international standards), and to mycological toxicometry of biocides taking into consideration unification of methods and classification of wood degradation factors in terms of etiology and symptomatology. He developed new, patented wood preservatives of general industrial application. He attached much importance to the research on the effect of trace elements on the growth of wood-attacking fungi. That research he published together with his wife, Halina, at the beginning of his work. Son of Professor Jerzy Ważny, Professor Tomasz, Ważny specializes in wood dendrochronology.

Jerzy Ważny was the main organizer and animator of symposia on Wood Protection organized at SGGW in Warsaw every two years for around 50 years.

He was considered the creator of the interdisciplinary science domain of wood protection and conservation in Poland. Apart from his scientific work he also carried out his mission in difficult and responsible didactic work by establishing the POLISH SCHOOL OF WOOD AND STRUCTURE PROTECTION which gained recognition in Poland and abroad.
Numerous scientific achievements of Professor Ważny in the area of wood protection encompassing wood industry, forestry, construction and monument conservation, established his position among the world's leading specialists in these research areas.

At the beginning of 2010 Professor Ważny was presented by the Polish Prime Minister, Mr Donald Tusk, the Award of the Chairman of the Council of Ministers granted in 2009 for eminent scientific achievements. That award was a crown of the Professor's jubilee of 60 years of scientific work, which he celebrated in 2009. The scientific path and achievements of the Professor are impressive and may serve as an ambitious yet hard model to follow.

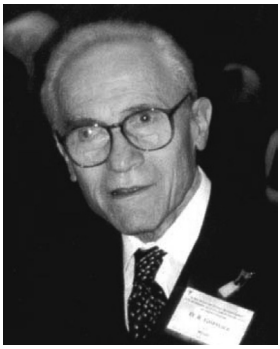
The employees of the Wood Technology Institute had the privilege to have worked under the supervision of Professor Ważny for many years in the wood preservation area (inter alia in the field of international cooperation between eastern and European countries in the area of wood protection), in Inter-department Science and Technical Commission on wood preservatives approvals, and in the Polish Committee for Standardization in Technical Committee no. 185 on protection of wood and wood-based materials.

The Professor was always ready to offer his knowledge and rich professional experience to help solve many issues important to the forest-based sector, and his advice was always considered very valuable.

Since 1970 he was a member of the International Research Group on Wood Preservation (now Protection) and its Honorary Life-Long Member since 2007. He was a man who possessed extensive knowledge and devoted his life to the wood protection issue. His scientific achievements are of world-wide importance.

At the same time we lost a great scientist, a good colleague and a sensitive man.

Władysław Strykowski (note communicated by Andrzej Fojutowski)



Professor Otto Gottlieb (1920 - 2011)

Fellow Otto Gottlieb passed away on June 20 in Rio de Janeiro. One of the world's best specialists on the chemistry of natural products, in 1999 Dr. Gottlieb was nominated for the Nobel Prize for his lifelong work on the chemical structure of phytochemicals. Dr.Gottlieb was born in Brno (currently Czech Republic) and came to Brazil in 1939, where in 1945 he graduated Magna cum Laude in Industrial Chemistry from the Federal University of Rio de Janeiro (UFRJ). After graduation he worked for 10 years at his father's industry, which processed essential oils from Brazilian plants to be used in manufacturing fragrances. In 1955 he joined the Weizmann Institute of Science, Israel, where he worked on plant products and on the identification of their chemical structure. Dr.Gottlieb returned to Brazil in 1961 to work first at the Agricultural Chemistry Institute (IQA), then at the University of Brasília (UnB) and the University of São Paulo (USP). During his time as professor at these universities, he was able to take sabbatical leaves to teach at Sheffield University, England, and Indiana University, United States. Dr. Gottlieb is the author of a number of books and about 700 papers on the chemistry of natural products and is considered the father of phytochemistry in Brazil. He is survived by his wife, three sons, 11 grandchildren and one great-grandchild.

FORTHCOMING MEETINGS OF INTEREST TO FELLOWS

The 7th International conference on plant biomechanics (PBM 2012) will be held in Clermont-Ferrand, France, from 20 to 24 August 2012

Further details to be announced

Computational micromechanics of wood and cellulose-fibre based materials
September 10-14, 2012

This meeting will be a mini-symposium at the 6th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012, http://eccomas2012.conf.tuwien.ac.at/) which will take place in Vienna, Austria, on September 10-14, 2012. This Mini-Symposium will provide a forum to present and debate recent applications of computational micromechanics to wood, paper, and board. It aims at bringing together researchers from various disciplines, such as wood and paper science, engineering, physics, and chemistry, working on the mechanical characterization and simulation of these composite materials. The symposium is intended to give an overview of our current understanding of wood and paper micromechanics from the molecular to the macroscopic scale and of the manifold approaches to link observations at different length scales. Contributions on combined computational and experimental approaches, reflecting the need for comprehensive microstructural information in microscale/multiscale modelling, are also welcome. The Mini-Symposiums covers the thematic scope of WG3 of COST Action FP0802 on 'Experimental and Computational Micro-Characterization Techniques in Wood Mechanics' and extends it to other cellulose-fibre-based materials.
Topics of interest include (but are not limited to)

- multiscale and multiphysics modelling of wood, board, and paper;
- molecular dynamics simulations;
- structure-function relationships;
- wood and paper fibres;
- fibre networks and non-woven structures;
- fibre bonding and debonding;
- fracture, damage and large deformations;
- transport phenomena involving vapour, fluids and solids;
- interactions between microscaled components;
- influence of moisture, temperature, and time on the mechanical performance;
- micromechanical aspects of wood modification and innovative cellulose fibre-based composites.

Further information - conference website http://abstracts.webges.com/eccomas2012

The 4th Nordic Wood Biorefinery Conference (NWBC 2012)
October 23-25, 2012

This will be held in Helsinki, Finland. For further information on the conference, call for papers, registration and other issues, please visit www.vtt.fi/nwbc2012.

The 4th International Conference on Pulping, Papermaking and Biotechnology (ICPPB'12)
November 7-9, 2012

This will be held at Nanjing Forestry University, Nanjing, China. The conference is organized by the Jiangsu Provincial Key Laboratory of Pulp and Paper Science and Technology, Nanjing Forestry University, Nanjing, China. The conference is co-sponsored by China Technical Association of Paper Industry (CTAPI), Technical Association of Pulp and Paper Industry (TAPPI, USA), Japan Technical Association of Pulp and Paper Industry (JTAPPI), North Carolina State University, University of Tokyo, National Natural Science Foundation of China (NSFC), and Jiangsu Technical Association of Paper Industry. Fellow Prof. Zhongzheng Li is the Conference Chairman and Fellows H-m. Chang and Y. Matsumoto serve as Chairman and co-chair of the Scientific Program Committee. In addition, 13 Fellows are involved as members of the Scientific Committee: P. Axegard (Sweden), P. S. Chang (Taiwan), F, Fukushima (Japan), A. Isogai (Japan), H. Jameel (USA), J. Kadla (Canada), T. Kondo, (Japan), D. Lachenal (France), M. Lindstrom (Sweden), T. Rosenau (Austria), T. Umezawa (Japan), L. Vikari (Finland) and H. Zhan (China). Also, Fellow S. Kelley (USA) is a member of the organizing committee. So, a total of 17 Fellows are involved in the organization of the conference. The Conference cordially invites Fellows to attend the conference. The detail of the conference can be fund by visiting the conference website: Homepage: http://icppb12.njfu.edu.cn.

2012 IUFRO All Division V Conference
July 8-13, 2012

Information online at: www.iufro2012.org
The Research Group/Working Party 5.04.08, Sawing, milling, and machining of IUFRO announce a Call for Papers for its technical session within the 2012 IUFRO All Division V Conference to be held on July 8-13, 2012 at Estoril Congress Centre, located in Lisbon, Portugal.

This session has the objective to offer scientists and engineers a platform for networking and exchanging knowledge on the latest advancements in the processing of wood and wood products.

Topics of interest include:

- Primary and secondary machining processes
- Cutting mechanisms
- Surface quality
- Tool materials
- Eco-friendly machining
- Enhanced performance
- Future applications

Abstracts for formal presentations and poster presentations are due by November 14, 2011. Please send your abstract to Roger E. Hernández (roger.hernandez@sbf.ulaval.ca), Takeshi Ohuchi (tohuchi@fukuoka-edu.ac.jp), or Pierre-Jean Meausoone (pierre-jean.meausoone@enstib.uhp-nancy.fr).

Forest Products Society‘s 66th International Convention on June 3-5, 2012 in Washington, DC.

Further information: Forest Products Society [julie@forestprod.ccsend.com]

21st International Wood Machining Seminar (IWMS-21), Tsukuba, 4-7 August, 2013

The 21st International Wood Machining Seminar (IWMS-21) will be held August 4-7, 2013 at EPOCHAL TSUKUBA, Tsukuba, Japan. This seminar is the 21stin a series that began in 1963 at California, USAto provide a forum for researchers and practicing engineers to present and discuss recent advances in wood machining.
The seminar will feature technical and scientific presentations and discussions on: Cutting process, Tool materials and tool wear, Advances in sawing technology, Planing, Molding, Routing,Sanding,and Novel wood products processing.An optional post-seminar tour will be organized. The conference language is English.
Tsukuba International Congress Center(EPOCHAL TSUKUBA)is an international conference centerlocated in the heart of Tsukuba City, which is home to a large number of internationally renowned scientists.

Further information from: http://www.ffpri.go.jp/en/symposium/iwms21/

BOOKS BY OR OF INTEREST TO FELLOWS

Polysaccharides In Medicinal And Pharmaceutical Applications

Edited by Valentin Popa
2011, 408 p., Smithers Rapra, ISBN 978-1-84735-436-5
This book presents new and specific aspects in the field of polysaccharides and their derivatives recommended for use in medicine and pharmacy. At the same time the aspects developed in this book will be used to design new systems for drugs delivery, immunomodulation and new materials based on polysaccharides isolated from different sources and their derivatives. The structure and properties of polysaccharides from different sources with potential applications in the fields of medicne and pharmacy are discussed. Thus structural aspects concerning hyaluronic acids, fungal extracellular polysaccharides, celluloses, alginates, hemicelluloses, dextran, glyconjugates and cyclodextrines are covered. The applications are described for both nonmodified and modified forms of polysccharides for drug delivery, immunomodulation, tissue engineering and hydrogel preparation.

Fossil Wood Calendar

Elisabeth Wheeler

http://www.mbgpress.info/index.php?task=id&id=11101
Fossil woods from Yellowstone National Park, Big Bend National Park, Florissant Fossil Beds National Monument, John Day Fossil Beds National Monument, and the Ginkgo Petrified Forest State Park all have stories to tell about ancient landscapes. This calendar features photomicrographs of the distinctive anatomy of these ancient trees, which range in age from 100 million years old to 15.5 million years old. Profits from the sale of this calendar go to support fossil wood resaearch and maintaining the InsideWood web site. http://insidewood.lib.ncsu.edu

HIGHLIGHTS

New Bachelor of Science Degree in Renewable Materials at Oregon State University

Communicated by Frederick Kamke

A more sustainable society requires that we use more renewable materials to make the products we need rather than continue to depend on oil and other non-renewable materials. This is a message that Oregon State University in Corvallis, Oregon hopes will attract more

students to study renewable materials and seek a career in wood products or utilization of other plant-based renewable materials. The demand for a greener future is at the heart of the Wood Science & Engineering Department at OSU. OSU has completed its first year of the new Bachelor of Science Degree in Renewable Materials. This degree program aims to educate and train the next generation of leaders and innovators for exciting and diverse careers that will make a difference toward a sustainable future. Oregon State's new Renewable Materials degree program is designed to fill a growing demand for professionals in the manufacture, marketing and utilization of sustainable natural materials. Renewable materials, such as wood, bamboo, straw and other plant-based goods, are used to produce building products, textiles, paper, energy and countless other items that are a part of our everyday lives. Focusing on a broad education that emphasizes science, technology, business and communications, Renewable Materials students are prepared to flourish after graduation. Graduates bring knowledge and expertise to the workplace to help expand the use of sustainable and renewable materials and products to enhance local, regional and global sustainability. At OSU we are no longer just about wood. The curriculum change was driven by low enrollment in our Wood Science undergraduate degree program. After the first year we have three times the number of new students enrolling than in recent previous years. It's too early to judge the change as a success, but so far the trend is encouraging. http://renewablematerials.oregonstate.edu/

Fellow Glasser Celebrates the 25th Anniversary of the Establishment of the First Biobased Materials Center
Communicated by Wolfgang Glasser

It is 25 years ago that Virginia's Center for Innovative Technology (CIT) in Herndon, VA, and the Bio-Regional Energy Associates, Ltd. (B-REAL) of Floyd County, VA, jointly funded the establishment of the Biobased Materials Technology Development Center at Virginia Tech. Whereas CIT officials at first resisted the designation "biobased" for reasons of a yet unknown term, the designation was eventually adopted in all resulting news stories, websites, theses, publications and patents. The Center's focus was the establishment and operation of a steam explosion pilot plant capable of fractionating hardwood chips and agricultural harvesting residues into three constitutive biopolymers, cellulose, hemicelluloses and lignin at the 100 lb [50 Kg]/day scale. Steam explosion services were made available to numerous corporate parties between 1986 and 1992 and beyond. Over the span of 6 years, the members of the Biobased Materials Center conducted research into value-added applications of plant biomass-derived biopolymers and their derivatives. The effort resulted in the graduate studies of 23 students and post-doctoral fellows, 10 theses and dissertations, 21 publications, and 7 patents. Members of the Biobased Materials Center came from five

different colleges and 8 departments. The research results laid the foundation for two start-up companies.

Highlights of the Center's activities were the annual research retreats by its students and research fellows. These retreats were held in various timeshare properties of the Center Director (Prof. W. Glasser), at Lake Lure, NC; Edisto Is., SC; Duck (Outer Banks), NC; and Myrtle Beach, NC. The gatherings were structured in Gordon Research Conference-like manner with 3-hour presentation ("show-and-tell") and discussion sessions, mornings and evenings, by individual fellows. Afternoons were reserved for social and group activities.

Group of research fellows of the Biobased Materials Center during a visit to Charleston, SC (1988). From left: Rajesh Jain (post-doc), Ingemar Falkehag (R&D researcher of Westvaco, host and tour guide in Charleston), Willer de Oliveira (PhD-cand., MESC), Vipul Dave (PhD-cand., MESC), Will Kaar (post-doc), Charles E. ("Chip") Frazier (PhD-cand., WSFP), Wolfgang G. Glasser (Prof., WSFP), Klaus Hofmann (PhD-cand., MESC), Nancy Rauschenberg (MS-cand., Chem. E.), and Gil Garnier (PhD-cand., Chem. E.).

The Center fellows also regularly attended the conferences, and participated in the poster sessions, of the Polymer Materials and Interfaces Laboratory (PMIL) and the Center for Adhesive and Sealant Science (CASS) of Virginia Tech.

The Biobased Materials Center had an Industrial Advisory Board that consisted of respresentatives of regional industry and corporate sponsors. Board meetings usually involved representation from Eastman Kodak (the predecessor of Eastman Chemicals), B-REAL, ALKO Ltd. AKZO America Inc., ARCO Chemicals, and Philip Morris, among several others.

The research efforts leading to start-up companies involved hydrogel separation materials and biodegradable films (barrier materials) on the basis of various polysaccharides, cellulose, chitosan and xylan. Hydrogel "beads" for separations in biotechnology and pharmaceutical and medical processes played a particularly important role in the interdisciplinary research of the Biobased Materials Center during the period of 1990-1994. The Center's location had expanded from the Thomas M. Brooks Forest Products facility of the university to the Corporate Research Park, where it was housed in a 2-story office/lab complex.

The lasting pride of the Biobased Materials Technology Development Center of CIT is its highly accomplished graduate students (see picture) having graduated with PhD degrees that are dispersed into various academic, governmental and industrial positions with high responsibility all over the world.

Supercritical Water: The wave of the future for wood
Communicated by Graham Allen

Although all around the world much attention has been focused on the production of bioethanol from cornstarch there is growing drive to have wood as the nonfood starting material.

It is the conviction of IAWS member, Professor Graham Allan of the University of Washington in Seattle, that the most promising approach to achieving this goal will be based on the breakdown treatment of wood with supercritical water (SCW) in an extruder-based continuous reactor for very short reaction times, measured in seconds.

There are several compelling reasons for this belief. Firstly, supercritical water at about 800 F is an excellent solvent for the components of wood. Second, SCW has good heat transfer characteristics. Third, at supercritical temperatures cleavage reactions of the macromolecules in wood to small structures take place extremely rapidly without the need of acids, catalysts or enzymes. Fourth, the cleavage fragments are simultaneously stabilized by hydrogen atoms derived from the supercritical water itself. Fifth, the aromatic rings of the lignin are stable to SCW for short exposures while the inter-ring linkages are ruptured.

All of the foregoing advantages listed have been fully documented in the literature by researchers in various countries.

But what are the disadvantages of supercritical water-wood reactions ?

Firstly, the pressures generated by water at supercritical temperatures are high and reach over 3000 psi necessitating special equipment and safety precautions. Second, since heating to supercritical temperatures takes many costly calories, on an industrial scale the amount of water must be minimized and the use of slurries avoided. Third, because the reactions with wood take place in seconds, conventional large scale batch chemical plant equipment cannot be employed because in such, rapid heating and cooling is not possible.

All of these difficulties can be overcome, in principle, by a high pressure extruder-based system in which undried wood is pushed through a reactor tube zone where the ample water normally present in the wood is heated to supercritical conditions for only seconds and then cooled instantaneously. The products are a water solution of fermentable sugars from the wood cellulose/hemicelluloses mixture and a water-insoluble oil consisting of small phenolic fragments from the lignin.

Professor Allan is providing some assistance to a new Washington company, Xtrudx Technologies Inc., that is developing both a laboratory scale batch reactor and industrial scale, extruder-based continuous processors for supercritical water treatment of wood as well as alternative biomass and other starting materials.

Radial increment as an index of stand structure
Communicated by Sergei Loskutov

Method of reconstruction of stand structure in last 10, 20, 30 years has been developing using high-yield pine stands of 55–57 years old. The base of approach is reconstruction of annual radial increment of all (210) trees on the experimental plot. Method allows to indicate trees' state in cenosis according to the value of their radial increment (tree ring width). It has been revealed that that trees' state in a stand is changing. Changes of tree rank (based on radial increment) decrease with age. That shows stabilization of trees' state in a stand (growth power) during the ontogenesis.
At this period (60 years) competitive relationships weaken. Density unevenness (spots with higher density) on the plot does not have significant impact on overall stand productivity.
For the dendroclimatic purposes (evaluating tree ring width response to weather conditions of each year) it is preferable to use trees from high rank group (having radial higher increment). Due to their better supply of photosynthesis products and soil nutrients variability of their annual radial increment is significantly lower compared to individuals with less developed crown and root system.

A.E. Petrenko, I.V. Semechkin, E.S. Petrenko, V.N. Sukachev Institute of Forest Siberian Branch RAS, Krasnoyarsk, Russia

WOOD AND FIBER SCIENCE
A request from Fellow Mike Barnes

Wood & Fiber Science is actively soliciting manuscripts and reviewers in the area of sustainable natural materials. Instructions for submissions and reviewer registration can be found at http://www.swst.org/wfs/journal.html. Your kind consideration is appreciated.

H. Michael Barnes, Editor

GUIDELINE FOR HIGHLIGHTS

The purpose of the Highlights, published in the Bulletin, is to promote the integration of the fields of wood science. Fellows are encouraged to submit Highlights to any of the Officers!

Highlights should:

- be free of jargon and highly technical language and (unexplained) acronyms, and be readily understood by wood scientists in other fields
- be no more than 1000 words (roughly 4 pages in the Bulletin)
- begin by providing a brief background or framework to put the report in perspecti
- give due credit to the work of others in the field, not just summarize the author's work
- contain important references to the literature for further reading
- finish with a statement of future directions in the area

NOMINATION PROCEDURE FOR ELECTION OF FELLOWS

The nomination process is relatively simple; all you need to do is fill in the Nomination form and send it to me. For those to be considered in the next election, the deadline for receipt of nominations is 30 September.

I then contact the nominee, confirm their willingness to stand for election, and then have them complete the more detailed application form. The Executive Committee reviews the nominees to determine if their applications are complete, and then, in early November, submits the completed applications to the membership for ballot.

Typically, scientists who are nominated are either mid-career, showing great promise and accomplishments, or near the end of their career, when their peers feel that they have made major continuing contributions over their professional life.

There are two areas of Fellowship that are under-represented in IAWS. One is Fellows from developing countries, where the number of refereed scientific contributions, as viewed by the developing world, may be somewhat lacking because of the past or current inability to publish in the leading journals, and/or difficulty with the English language. The other area relates to the few numbers in certain scientific disciplines; if you are in one of those, you are aware of that. The Executive Committee is also interested in election of wood science managers who have had a major impact through their oversight of research activities, without necessarily having the expected number of refereed publications.

Please spend some time thinking about potential nominees, perhaps looking through the Directory (user name: fellows; password: IAWSWOOD) and the listing of Fellows by countries. Since we do not "promote" ourselves to gain members, it is up to the Fellows in the Academy to provide the basis for this recognition.

Lennart Salmén

Nomination for Fellowship of the International Academy of Wood Science

Name of Candidate:
Position of Candidate:
Candidate Mailing Address:

Candidate email address (required!):

Candidate's Background (maximum 100 words):

Reasons for the candidate's nomination (outstanding in his/her field; substantial contributions to wood science; major results in management of research; etc):

Date:
Nominator name:
Email address:
Telephone:

Please return to: lennart.salmen@innventia.com

IAWS

www.iaws-web.org