

**INTERNATIONAL  
ACADEMY  
OF  
WOOD SCIENCE**

**BULLETIN  
2009-II**



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**November 2009**

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## MESSAGE FROM THE PRESIDENT

I am sure there are many that view IAWS as having a single purpose—that of recognizing contributions of outstanding wood scientists through bestowing the title of Fellow. The Executive Committee is well aware of that and over about the past decade has debated how IAWS might be more effective in promoting the field of wood science. This may be a good time to bring the membership up to date on activities of the Executive Committee. Most of these are in various stages of development, but it seems that the only constant is change!

**Plenary meetings.** These have been the highlight of our activities since they were started on an annual basis in 2000 at Reading. The next meeting is in June 2010 at Madison, Wisconsin, the home of the USDA Forest Products Laboratory and follows the annual convention of the Forest Products Society. This will be the first plenary held in the US. Beyond 2010, we are planning to meet in Stockholm in 2011 (the year that Lennart Salmén becomes President) and Hamburg in 2012.

**Emerging program activities.** Starting in March 2010, the EC will meet in Rabat, Morocco for a joint meeting with several African organizations. This is a new initiative to help further the development of emerging wood science educational and research programs in areas of the world in which IAWS has minimal representation, and in a number of cases, where wood science has not necessarily matured or has not gained international recognition. In 2011, we are planning a similar meeting in Brazil. A very important part of these meetings will be follow-up by EC to provide assessments of the programs and recommendations for improvement. We are completely open to suggestions about where future meetings should be held.

**Supporting Members.** These are a very important part of our financial support, but even more so, the importance of their recognition of IAWS. The number has been relatively constant over the past decade (27), with some changes, but we have a few that date back to the founding of IAWS in 1966. We are especially interested in adding Supporting Members in those parts of the world that have emerging programs, and that can tie into our EC activities as mentioned above.

**Certification.** Perhaps another important role that we can have as an Academy is to recognize excellence in not just individuals, but in wood science organizations. The downturn in the world economy has delayed the implementation of this program, the details of which have been discussed in a number of past Bulletins and at IAWS meetings. We now have information on the Certification process on the IAWS web page and would be interested in discussing this with any organization that might want to consider it. Several have indicated interest, but want to wait until the world settles down a bit.

**Bulletin.** We created a position for a Bulletin Editor to put more emphasis on this as our primary means of communicating with the membership, and free the Secretary to concentrate

more on the Web Page. Past President John Barnett has put considerable effort into making this a first-class publication. We were very pleased with the feedback from Fellows who have provided John with a wealth of good material to share with you.

**Expertise directory.** This has been discussed for a number of years and it appears to be reaching the final stages of moving toward implementation. The idea is to provide a resource for IAWS Fellows and Supporting Member organizations to be able to search for Fellows who can provide advice or consulting on specific technical issues.

**PhD dissertation/thesis award.** There have been discussions on this topic for about eight years and we are close to determining the selection and award details. In principle, it would involve a yearly assessment of submitted extended abstracts of these papers, and provide recognition, including a presentation by the first place winner at a Plenary meeting.

**Web page.** In 2000, we initiated the web page at Berkeley with a contribution from Fellow Chow. Over this decade, we have continued to add information on our current activities and membership. Whereas the Bulletin is our primary means of current communication with the membership, the web page is now our repository of both current and historical information of value to the Academy.

**Academy lectures.** As stated in the Bylaws, selection as “Academy Lecturer” is the highest honor (and currently, the only official honor) that the Academy can bestow on a Fellow. It recognizes distinguished achievements in the science of wood, which in turn encourages high standards of research and publication. An Academy Lecture now precedes the rest of the technical program of all Plenary meetings, and has been added to other important wood science society (and IUFRO) meetings. The public relations information and introduction of the Academy Lecturer helps us to communicate the objectives of IAWS to the broader wood science community.

**Wood Science and Technology.** As the journal of IAWS, another decade-long effort has been to bring the journal up to international standards. Our effort was to express concerns about long publication times, problems with the review process, and the representation of the various disciplines of wood science by the papers in the journal. It was a multi-year effort, but our persistence paid off and we can all be pleased at the positive response of the editor and publisher.

In closing, I do want to mention that all of the above activities have been a group effort under the leadership of the presidents over this period of time. I would also be remiss in not recognizing the outstanding support to the executive officers by Secretary Uwe Schmitt and Treasurer Howard Rosen. Both have contributed substantially to the continued success of IAWS.

*Frank Beall / Richmond*

## REPORT OF PLENARY MEETING IN RUSSIA

The 2009 IAWS Conference was held in Saint-Petersburg State Forest Technical Academy, on June 15-17, 2009 and in Moscow State Forestry University, on June 18-20, 2009. The theme of the meeting – “Forests as a renewable source of vital values for changing world” – was partly directed at considering the situation of Russian Forests, which represent the world’s major reserve of wood.

There was a very broad range of contributions, oral and posters, mainly by representatives of government research organisations. There were two official languages, English and Russian with an excellent simultaneous translation allowing fruitful discussions between Russian and English speaking participants. More than 100 scientists from 20 countries discussed such diverse topics as: wood structure from nano- to macro-scales, wood as an industrial raw material, wood processing, industrial control of wood and wood products, innovative and smart wood products, sustainable use of forest resources, multiple forest values, forest resources and global wood products markets and trade, wood forming, wood plant physiology and dendrochronology, and biomechanics. 18 Fellows of the Academy from China, Finland, France, Germany, Japan, Poland, Sweden and USA attended the conference despite difficulties caused by to the global financial crisis and visa problems.

A very interesting field trip around Saint Petersburg including a visit to a modern plant producing outdoor furniture for children was organized by the Forest Technical Academy. This high performing company was managed by a young staff, including graduates and PhDs from the Forest Technical Academy.

The Academy lecture “Wood as a Natural Smart Material” was presented by Fellow Boris Ugolev, Professor in the Moscow State Forest University and President of the Regional Council of Wood Science. The audience was impressed by the excellent, clear, pedagogic scientific presentation, which gave a good overview of wood as a material for the future. It is a noteworthy and remarkable fact that Professor Ugolev is in his 64<sup>th</sup> year of research and teaching activity!

It was the first time that an Academy event has been organized in Russia. Moscow State Forestry University is a supporting member of the Academy and both it and St Petersburg State Forest Technical Academy are keen to strengthen their relationships with IAWS. For the university in Moscow, it was the first time that had welcomed and organised a meeting with participants from the west. The atmosphere was very friendly and close exchanges between participants made this 2009 IAWS Conference a real success.

*Xavier Deglise / Nancy*

**BUSINESS MEETING, 16 JUNE 2009, ST. PETERSBURG/RUSSIA**

The meeting was called to order at 16.15 h by Vice-President Lennart Salmén. Fellows Salmén (Vice-President), Deglise (Past President), Schmitt (Secretary), Alekseev, Chen, Deineko, Gril, Guitard, Holmbom, Jiang, Loskutov, Nicholas, Niemz, Sugiyama, Ugolev, were present.

VP Salmén opened the meeting at St. Petersburg State Forest Technical Academy, welcomed Fellows and thanked the local organizers for the opportunity to hold the 2009 IAWS Plenary Meeting in St. Petersburg and Moscow. Regarding the presentations during the meeting, VP Salmén asked Fellows, if they agree to put their presentations on the IAWS web page. All attending Fellows agreed. Past President Deglise reminded Fellows that since 2005 already most of the presentations are available on our web page.

VP Salmén informed the meeting about the results of the 2009 Fellow election. Altogether 16 outstanding scientists were elected. New Fellows enter their membership after they have paid their first dues for the year of their election. He also encouraged Fellows to nominate colleagues from underrepresented countries. A brief description and discussion of the simplified election process was following. Fellow Ugolev commented pros and contras of the new process. The meeting commemorated Fellows Bhat and Setterholm, who passed away this year. VP Salmén additionally gave a brief overview on the outcome of the recent EC Meeting in Stockholm held end of March 2009 (minutes already published in Bulletin I-2009). There was a short discussion on how Fellows could be best characterized by a few key words. Past President Deglise figured out that such a key word system in some cases would be very advantageous for companies or organizations looking for experts in certain fields. The meeting agreed in revising and updating the old key word system. The Vice President informed the audience that EC decided to hold future EC meetings in underrepresented countries to intensify contacts and to promote our Academy. Past President Deglise added that IAWS should support the development of research in the field of wood science. The 2010 EC meeting is scheduled to be held in Rabat/Morocco. Coming Plenary Meetings are in 2010 in Madison/Wisconsin (USA), in 2011 in Stockholm (Sweden), and in 2012 in Hamburg (Germany).

The financial situation of the Academy is healthy and VP Salmén reported that only a few Fellows are not paying their dues. He also emphasized that EC members are always open, if there are any problems in paying dues.

Regarding other future activities of the Academy, VP Salmén reported on the certification process, on the recruitment of new Supporting Members, on creating an award for excellent PhD theses to promote young scientists. There was a short discussion on other possibilities to achieve this goal, such as financial support to attend an IAWS Plenary Meeting. Fellow Ugolev also mentioned that IAWS could be active in structuring of and education in wood

science especially against the background of environmental problems. In Russia, to Ugolev's opinion, wood science should represent a key item in education. There was an intense discussion on how to promote wood science in an effective way.

The meeting was closed at 17.40 h

*Uwe Schmitt / Hamburg*

## **ACADEMY LECTURE BORIS UGOLEV**

**Presented during the 2009 IAWS Plenary Meeting in St. Petersburg & Moscow/Russia, June 19, 2009.**

### **“Wood as Natural Smart Material”**

“Smart Materials” (SM) creation is one of the most perspective trends in society development. SM provide useful reactions to different exterior actions. The dominant feature of artificial SM is the “shape memory” effect. This phenomenon is based on quazi-residual frozen strains (FS). They were detected by us at constrained shrinkage in the early 1960s. In 1971 in collaboration with Y.Lapshin the integral law of wood deforming under loading and moisture content and/or temperature changing was formulated. Different character of deforming at drying and wetting were taken into account. This law was applied for calculation of wood drying stresses; the developing of drying schedules; nondestructive stress control by differential shrinkage method; and for conditional treatment after drying. In 1952 wood internal stresses measurement method was proposed, it raised this key problem research to a quantitative level. Stress memory and strain memory effects for wood were found. Wood has ability to recollect the type of load (tension or compression) which it had undergone. For example, the size of unloaded dried wood specimen decreases at heating. In order to recognize in complex strains the kind of constituent strain (thermo-frozen or hygro-frozen) they were “marked” by the type of loading that had induced the strain. This approach in particular was applied in working out the method of removing veneer waviness by creation of counter frozen strains of both types. The research conducted in collaboration with the Institute of Solid State Physics using method of IR spectroscopy showed that at drying of loaded wood the degree of orientation in amorphous areas of cellulose increases; expected by us increasing of wood stiffness was experimentally proved. Lately we have suggested the classification of hygromechanical strains which includes the notions “reduced wood shrinkage” and “frozen shrinkage”. Thus it takes into account decreasing of shrinkage coefficient at sufficiently high level of tension loading. These terms reflecting the nature of wood behaviour at drying is more correct than “mechano-sorptive creep” (MSC). MSC can be observed at cyclical

change of moisture content in loaded wood. “Hygrofatigue” of wood plays main role in this process. It can be seen from the suggested conception of thermo-hygrofrozen strains, that at drying or cooling of loaded wood its total strain doesn’t decrease, in spite of the increase of the stiffness of wood. This phenomenon can be found in the studies of other researches. Further investigations of deformative conversions will permit to improve wood technology and create new smart wood composites.

### The Lecturer



Fellow Ugolev during his AL (left). Past President Deglise hands over the AL certificate to Fellow Boris Ugolev (right).

Boris Ugolev is Professor of Moscow State Forest University (MSFU), Mytischki, Russia, from which he graduated in 1948 with diploma of mechanical engineer. His education includes PhD (1953), DSc. (tech., 1968), Professor (Wood Science) of Moscow Forest Engineering Institute (now Moscow State Forest University). His research carrier started as a postgraduate student and then he was a research scientist associate at the Central Institute of Wood-working, Moscow-Khimki. In 1957 he returned to his alma mater where he is working until now. For forty years he was Head of Wood Science Department. His textbooks have been published many times since 1975. He is the author of more than 300 books, articles and patents. His fields of research are to the wood physics and mechanics. For more than half a century he has been studying wood behavior at drying. Besides, he together with his pupils, made an essential contribution to the development of rheology, nondestructive testing methods, research of density, strength, moisture content, shrinkage, colour, luster and other properties of wood. He is a scientific adviser to various encyclopedia, member of editorial boards of *Woodworking Industry* (Russia) and *Wood Research* (Slovakia). For many years he works in the field of home state and international standardization of wood testing methods, timber quality and

terminology. He is the President of Regional Coordinating Council of Wood Science for East European countries. In 1991 he was elected Fellow of IAWS and retained membership in IAWS Board of Directors from 1998 till 2004. He was also a member of IUFRO and RILEM Working Groups. He took part in conferences and Plenary Meetings of IAWS (1975, 1997, 2003). He delivered tutorial lesson at the third IUFRO Wood Drying Conference, Vienna, 1992 and presented Honorary keynote on the ninth IUFRO conference, Nanjing 2005. He delivered lectures in many European countries, USA and Canada. He was the Professional Guarantor of RCCWS International Symposiums on «Wood structure, properties and quality» in Mytishi, Moscow, Petrozavodsk, St. Petersburg, Russia (1990, 1996, 2000, 2004). He has been awarded a title «The prominent Scientist of Russia» (1995), elected an Honorary member of the Russian Academy of Natural Science (1996), awarded the medal of Zvolen Technical University, Slovakia (1998), elected Dr.h.c. of the University of West Hungary (2006).

## HONOURS AWARDED TO FELLOWS

**The Academy is pleased to report the following awards of honours to Fellows and to offer its congratulations.**

### **Paul Kibblewhite**

Fellow Paul Kibblewhite has been elected as the first Scion Emeritus Scientist. This newly introduced position will be bestowed on retiring scientists who have achieved eminence in



Fellow Kibblewhite (centre) accompanied by his wife Leonie receiving his award from Russ Ballard, Chairman of Scion. Thanks to Scion for information and photograph.

their field and enables continued involvement with the organisation. It provides infrastructural support to enable the scientist to remain an active contributor to both Scion and their field of science. Fellow Kibblewhite has forty nine years of continuous service with the New Zealand Forest Service and later, Scion, during which time he became recognised as a leading international expert in fundamental and applied pulp and paper research. He has produced more than 144 refereed papers, 250 commercial reports and one patent. His specialised expertise includes knowledge on the papermaking potential of radiata pine, eucalypts and a variety of other softwoods and hardwoods. His many awards began with a gold medal in 1969 for from the Institute of Paper Chemistry (USA) for excellence in his PhD thesis. Among others he has received the L.R.Benjamin Medal of the Australian Pulp and Paper Industry Technical Association and one of New Zealand's highest awards, the Shortland Medal. He was elected a Fellow of the Royal Society of New Zealand, and was awarded the Medal of the British Empire (MBE).



### **Walter Liese honoured as Bamboo Pioneer**

Address by Susanne Lucas, CEO, World Bamboo Organization

Living creatures all around the world depend on bamboo for their survival. This includes Homo sapiens. We all know that for centuries, human cultures have cultivated and utilized bamboo for their daily needs and through innovation improved their livelihoods and economies. On the village level, farmers and craftsmen developed techniques which were passed down from generation to generation. In more modern times, man has looked to science for solutions and progress. Through committed research, we have discovered new approaches of how bamboo as a managed

resource can lead to the betterment of mankind. Dedication, determination and collaboration are required to advance any scientific endeavor. There exist individuals whose lifelong commitment to bamboo science deserve our attention and honored recognition. Today, as part of the inauguration of the 8th World Bamboo Congress, we honor Walter Liese as a great Bamboo Pioneer.

If ever Germany was to have an ambassador at large for forestry, and for bamboo in particular, Prof. Walter Liese would eminently qualify for the post. His international assignments have carried him far and wide - from the lowlands of Bangladesh to the high mountains of Chile;

from the humid forests of Indonesia and Vietnam to the arid zones of Nigeria and Tanzania; from the near shores of Portugal to the far shores of the Philippines. In his career as a wood biologist and forestry expert, which spans nearly five decades, Prof. Liese has stretched his faculties to their limits to become an institution in himself.

His research on bamboo anatomy peaked during the Hamburg years (1963-91) though he still continues to work as Professor emeritus. The first stimulus came from his association with Dr Dietger Grosser, who had the aptitude and patience to search for even the most minute details in anatomical studies. Together they presented an impressive array of histological studies on bamboo. Prof. Liese's joint work with Prof. Narayan Parameswaran added a competitive depth to bamboo research. Much of this research remains to date the most important contribution to the subject. Although enamoured by the lure of bamboo, Liese never allowed that to affect his other academic interests — wood biology, wood pathology and wood protection. He has delivered lectures in over 50 countries on these subjects, and has carried out research on a number of related areas such as: wood and bark anatomies; fine structure of wood; wood quality; wound reactions in trees and monocotyledons; micromorphology of wood degradation; physiology and enzymology of wood fungi; and promotion of wood utilization in developing countries. A prolific writer, Prof. Liese has to his credit well over 400 scientific papers (70 of which are on bamboo and 20 on palms, mainly co-authored by Gudrun Weiner). He has also guided 70 diploma students and 35 doctoral students.

Apart from teaching at the Hamburg University, Prof. Liese also served as the Director of the Institute for Wood Biology and Wood Protection, and from time to time as the Executive Director of the Federal Research Centre for Forestry and Forest Products. During the Hamburg years, and after his official retirement in 1991, he lent his expertise to several international and national entities, including: the FAO Advisory Committee on Forestry Education (1966-90); the International Union of Forest Research Organizations (IUFRO — as President during 1977-1981 and in various other capacities from 1968 to 1995); the FAO/IUFRO Committee on Bibliography and Terminology (1964-73); the International Academy of Wood Science (as Fellow in 1966 and as Vice President during 1969-72); EURO SILVA, the European Research Cooperation on Tree Physiology (as Chairman of the Joint Steering Committee during 1988-93 and as Vice Chairman in 1994); Deutsche Gesellschaft für Holzforschung (as Chairman for Wood Protection during 1972-76); the Research Advisory Board of the Forest Research Institute, Malaysia (1989-90); etc. Prof. Liese was instrumental in getting the International Development Research Centre (IDRC) of Canada interested in bamboo, and played an important part in the creation of the International Network for Bamboo and Rattan (INBAR). He is often referred to as the “grandfather of INBAR”. During his IUFRO presidency Prof. Liese strongly advocated and spearheaded the involvement of developing countries in the organization, and helped focus IUFRO's activities more on issues of tropical forestry.

He was instrumental in initiating the call for action on tropical forestry, which later developed into the IUFRO Special Programme for Developing Countries. It was also during his presidency that IUFRO turned truly international. International recognition of Prof. Liese's expertise in his chosen fields was never found wanting. He was accorded honorary memberships of the Philippine Forest Research Society, Finland Society of Forestry, International Association of Wood Anatomists, Indian Academy of Wood Science, Society of American Foresters, l'Académie d'Agriculture of France, IUFRO, Chinese Bamboo Association, Academia Italiana di Science Forestate, German Society for Wood Research, Polish Academy of Science and the European Bamboo Society, amongst others. In appreciation of his academic brilliance, Prof. Liese was awarded five honorary doctorates, including ones from the University of Sopron, Hungary; University of Zvolen, Czech Republic; University of Istanbul, Turkey; University of Poznan and University of Ljubljana, Slovenia. He also received numerous medals of merit for his achievements in forestry. Prof. Liese is very highly regarded in Asian countries, especially China and India, not only for his research contributions but also for helping Asian scientists. Although he retired from official engagements in 1991, Prof. Liese continues to contribute to the world of forestry with his profound knowledge and extensive experience. Since then, 10 years have passed with about 60 additional bamboo papers and a book "*Bamboo Preservation Compendium*" with S. Kumar as INBAR/CIBART Techn. Rep. 22, 231 pp., many bamboo lectures and bamboo consultancies in Ethiopia, Costa Rica, Colombia, China, Thailand, Northeast India, among other activities. The World Bamboo Organization is extremely fortunate to have Prof. Liese as a member of its Honorary Council.



**Peter Niemz**

Fellow Niemz was awarded an honorary doctorate by the University of West Hungary in September. In the same month he received a Distinguished Service Award at the 16<sup>th</sup> International Nondestructive Testing and Evaluation of Wood Symposium in Beijing.



### **Arthur Ragauskas**

Fellow Ragauskas has been elected to the TAPPI Research Management Committee



### **Roger M. Rowell**

Fellow Rowell, retired Senior Technical Pioneering Scientist at the USDA, Forest Service, Forest Products Laboratory, has achieved Emeritus Status at the University of Wisconsin-Madison in recognition of his accomplishments in research and teaching. The Executive Committee of the Department of Biological Systems Engineering and Dean Molly Jahn recommended Dr. Rowell for this recognition for his more than 30 years teaching and as Major Professor for Graduate Students at the University. It was approved by the Chancellor and University of Wisconsin System Board of Regents. Dr. Rowell has also been inducted into the Southwestern College Natural Science Hall of Fame also for his research and teaching accomplishments. Dr. Rowell received his under graduate degrees in Chemistry and Mathematics at Southwestern College. Fellow Rowell is now a Guest Professor at SP Trätekt, EcoBuild in Stockholm, Sweden.



### **Gerd Wegener**

Fellow Wegener, presently Head of the Dept. of Wood Science and Technology at the Technische Universität München (TUM) has been recognised by two Achievement Awards for his life's work. He has been presented with the Schweighofer Prize and the Federal Cross of Merit.

He was awarded the Schweighofer Prize 2009 on 18<sup>th</sup> June, at a major ceremony in the Vienna City Hall in the presence of 500 guests from over 30 nations. This award for innovation was founded by the Austrian wood industrialist dynasty Schweighofer and represents the most highly endowed European Award for the wood and timber industry. The citation for the award included the statement that “his innumerable innovative research approaches have led to new developments and have inspired generations of scientists and traders in the wood and timber

industry”. Professor Wegener has indicated that he will allocate part of the prize of 100.000€ to young academics in the field.

The award of the Federal Cross of Merit of the Ribbanded Order of Merit of Germany was decreed by the Federal President of Germany and Fellow Wegener received the appendent regalia – order and document on July 3<sup>rd</sup> 2009 from the Bavarian Minister of Agriculture, Helmut Brunner in a ceremony at the Ministry of State for Food, Agriculture and Forestry. The minister stated that Prof. Wegener was one of the most invaluable ambassadors for the increased application of wood and wood products. With the Federal Cross of Merit with ribbon, his exemplary commitment towards the Bavarian Wood and Forest Industry has found well deserved recognition.

## **UPCOMING MEETINGS OF INTEREST TO FELLOWS**

### **IAWS Plenary meeting 2010**

The 2010 meeting will be held in Madison, Wisconsin, USA jointly with the Pan-American Regional Group of the International Association of Wood Anatomists and Division 5.01 (Wood Quality) of IUFRO. It will take place from June 23 – 26 and will celebrate 100 years of wood science and wood anatomy research at the Forest Products Laboratory. If you are interested in attending, send an email message to Regis B. Miller (rmiller1@wisc.edu) or Frank Beall (frank.beall@berkeley.edu) so that future information can be quickly distributed via email. You can check the IAWA or IAWS websites at <http://www.iawa-website.org/> or <http://www.iaws.uhp-nancy.fr/> for updates.

The conference will include all aspects of wood anatomy from wood science, forest products, wood identification and wood quality to wood formation, tree ring analysis, and paleobotany. All fellows and guests are welcome. Offers of papers are also welcome.

### **IAWS EC Meeting and Workshop in Rabat**

The next Executive Committee meeting of IAWS will take place at a joint international workshop with the Ecole des Sciences et Technologies du Bois at the Mohamed V-Agdal University Faculty of Sciences in Rabat, Morocco, from 22-25 march 2010. The theme of the workshop will be “Wood and Derivatives: Sustainable materials and products for future needs. A limited number of participants will be welcomed and further information may be obtained from Xavier Deglise [Xavier.Deglise@lermab.uhp-nancy.fr](mailto:Xavier.Deglise@lermab.uhp-nancy.fr)

### **The 11th European Workshop on Lignocellulosics and Pulp, Hamburg / Germany, August 16 - 19, 2010**

Further information available on <http://www.ewlp-2010.org>

### **The International Workshop “Principles and Development of Bio-Inspired Materials”, 13-15 April 2010, Vienna, Austria**

**This is a strategic workshop organized under the auspices of COST (Cooperation in Science and Technology). Further information on <http://www.cost.esf.org/events/biomat>**

### **The 4th International Symposium on Emerging Technologies of Pulp and Papermaking, November 8-10, 2010, Guangzhou, China**

Further information on <http://www.ppeskl.labs.gov.cn/isetpp>

## **XXIII IUFRO World Congress 23-28 August 2010 – Seoul, Korea**

The theme for the XXIII IUFRO World Congress is “Forests for the Future: Sustaining Society and the Environment.” There are two sessions dealing with wood quality: A-14 **Quality wood from forests in a changing climate** Session coordinator: Pekka Saranpää

E-06 **Properties and utilization of plantation timbers** Session coordinators: KeeSeng Gan & Pekka Saranpää Online submission of abstracts: <http://www.iufro2010.com/>

## **BOOKS BY FELLOWS**

### **Fellow Dimitris Argyropoulos**

**Materials, Chemicals and Energy from Forest Biomass**, ACS Symposium Series No. 954, Argyropoulos, D. S., Ed.; Washington, ACS Books, 2006. Containing 33 Chapters, ISBN: 978-0-8412-3981-4,)

### **Fellow Helmuth Resch**

#### **Drying Wood With High Frequency Electric Current**

University of Natural Resources and Applied Life Sciences, Vienna, Austria

Available from the Society of Wood Science and Technology, Madison, Wisconsin, USA  
[www.swst.org](http://www.swst.org)

ISBN 978-0-9817876-1-9

This book offers a broad coverage of research and development over many decades up to industrial applications of special drying methods using high frequency electric currents for wood and wood products. It aims at providing some understanding of the many ways to employ the technology. It introduces the physical process of dielectric heating with its advantages of rapid and relatively uniform heat transfer, resulting in high drying rates and avoidance of various drying defects, including any significant casehardening and oxidative discoloration of wood. Heat transfer to and evaporation of moisture from wood is shown in dependence on the dielectric properties of materials. Because wood is generally heterogeneous, these properties vary not only with the frequency of the current and the field orientation, but also with the moisture content, temperature, and density of wood. Considering these parameters and the specific heat of the material, the power absorption and finally the feasibility of a system can be estimated.

After recalling the reasons for drying wood products and first principles of moisture evaporation, the text traces the historical roots of using high frequency current for heating and drying of wood. Principles of and formulas describing dielectric heating and the dielectric

properties of wood give a background useful for understanding parameters of specific applications, energy transfer, and power consumption. For the selection of a frequency for heating specific products, the knowledge of the penetration depth is vital. The book recalls how conception of the original idea sparked research leading to a rush for patents and early practical applications. Early equipment development for continuous and batch dryers using radio frequencies and microwaves is reported from work in Russia, USA, Canada, Japan, and Europe. The greatest emphasis is placed on the method of combining radio frequency heating with vacuum drying. The book tells how research during the last decades lead to industrial installations designed mainly for drying of lumber and timbers in vacuum kilns. This development provided a positive picture for higher value products. On the other hand, the continuation of research with microwaves promises to make use of their unique properties. Some ideas are advanced on achieving rapid and economic drying by combining other heat transfer methods with high frequency heating along production lines. Finally, the present understanding of the drying mechanism, the technical feasibility, and economics are considered. - A broad listing of relevant literature provides the reader with many references. Data are presented in international and American units.

## **WOOD SCIENCE AND TECHNOLOGY**

The Journal of Wood Science and Technology is our official journal and its editorial board is made up of officers and board members of the Academy. It is a pleasure therefore to report that under the guidance of Fellow Gerd Wegener, it has more than doubled its impact factor from 0.69 in 2007 to a respectable 1.49 in 2008. This reflects the fact that the quality of papers submitted is rising, which in turn shows that the journal is seen as the vehicle of choice by many for the publication of wood science research. Fellows are encouraged to submit high quality manuscripts to the journal to help to drive continuing improvement in impact.

## **HIGHLIGHTS**

### **Conference on Sustainability in Wood Utilizing Sectors, Portugal '09**

#### **Communicated by Fellow Arthur Ragauskas**

As the world headlines demonstrate, most of today's problems, challenges and solutions are global in nature. Exchanging experiences and thoughts between students, researchers and academics from different countries can accelerate the process to reach common goals; in case of sustainability these consultations bear enormous importance since the aims are not less than to relieve our environment, reach energy independence and to do all these in an



Members of Dr Ragauskas' group in front of the Paper Science Institute of Portugal. Left to right: Matyas Kosa, Gregory Marr, Cameron J. Tyson, Arthur J. Ragauskas, Anthony Baldrige, Kathy B. Woody, Christina Young, Tina Dreaden.

economically feasible manner. In late July a team of Georgia Tech professors and graduate students left Atlanta to visit leading Portuguese universities and a paper research institute to discuss current and future practices on sustainable wood utilization. The seminar series had began in Covilha at the University of Beira Interior (UBI) where Dr. Ragauskas from IPST @ GaTech talked about the future of biorefineries in the US including the reasons for their existence and fast development in recent years. Dr. Ragauskas emphasized advantages that are recognized just recently, like new employment opportunities and the possibility to enhance the economy. He added that governments globally understand these problems and are trying to act more aggressively than ever before, researchers and students are committed to sustainability and the industrial sector is also more and more concerned. Georgia Tech graduate students also gave seminars related to sustainability; starting from results on the research of photosynthesis through new conversion methods to gain biofuels from lignin until the detection of harmful compounds present in the air in trace amounts. On behalf of our hosts at UBI, Dr. Ana Paula Duarte held a seminar about the current fields of research at their university, in the Unit of Textile and Paper Materials: renewable materials and composites, processing wastes from the pulp and paper industry, new natural products and biomass to bioethanol in the forestry. We also visited the Portuguese Paper Science Institute (RAIZ) in Aveiro where we continued our discussions on the forest Biorefinery. RAIZ

scientist Gabriel Sousa highlighted the need for innovative forest Biorefinery technologies that can be integrated into modern Kraft pulp mills. Dr. Jose Luis Amaral the technical director of RAIZ summarized their research on every area connected with paper industry. He went from optimizing soil and nutrition conditions on eucalyptus farms through pulping, bleaching and the next generation of papermaking. We visited a model eucalyptus plantation and later Soporcel's mill in Figueira da Foz where the mill manager gave us a spectacular tour of their facilities. At the University of Aveiro (UA) our host was Dr. Carlos Pascoal Neto who is the head of the Department of Chemistry. The scope of their lignocellulose research can be divided into two main tasks: chemistry and structure of lignocellulosics, and conversion of lignocellulosics to new biomaterials. The last stop of our visit was the Chemical Engineering Department of the University of Coimbra (UC), one of the oldest universities of Europe, where Dr. Paulo Ferreira introduced their department. Their research interests contain areas like the final bleaching stages of *E. globulus* pulps, polyoxometalates used in paper surface modifications, wood-PVC composites and polymeric nano and micro composites. Seeing researchers work together towards a comprehension of the chemistry of lignocellulosics and their efficient conversion to new biomaterials and biofuels was probably the most amazing thing to learn from the students' perspective.

## **Forestcluster Ltd.**

### **Communicated by Fellow Pekka Saranpää**

[http://www.forestclusterportal.fi/index.php/Main\\_Page](http://www.forestclusterportal.fi/index.php/Main_Page)

Forestcluster Ltd is responsible for the operation of the cluster's strategic centre for science, technology and innovation. Its task is to initiate research and innovation programmes and to channel research funds to selected focus areas. The forest sector's strategic centre - led by Forestcluster Ltd - intends to become the strongest innovation environment of the branch globally.

The objective of Future Biorefinery, the second research program of Forestcluster Ltd., is to develop new methods enabling fractionation of wood into cellulose, hemicelluloses, lignin and extractives in their native-like form and further, to upgrade these fractions into chemicals and materials.

## **The ‘Rot Bot’ Website**

**Communicated by Fellow Jim Bowyer**

The Rot Bot is a website that does one thing - collects your case studies and images of wood biodeterioration. This includes abiotic damage, mold, stain, rot, insect, and marine borer attack. The next generation of wood deterioration experts will learn better and faster about real-world biodeterioration issues if they can study real-world cases. Case studies complement what is learned from biological texts. They are exciting. Otherwise, gaining experience in the field takes years, and we are losing opportunities to get outside and put our hands on the issues. Also, the bioproducts industry is evolving rapidly and diversifying. It is hard to stay current. This knowledge gap will grow without our help, and the consequences include higher cost, increased risk, and excessive material waste. I think technology can help us improve diagnosis of ‘disease’ in buildings, just like online databases have helped clinical pathologists practice diagnosing disease in people.

Please consider submitting a case study, either spectacular awe-inspiring damage or something common. Instructions are on the site, it is easy, and it is something you can cite for your files using standard formats (e.g., APA, AMA, Harvard) for electronic database publications. The site was built to be as invisible as possible and to require little computer skill. The goal is to use technology as a tool, not a curiosity, in order to enhance knowledge transfer from the leaders in our field to those who hold its future.

The Biodeterioration Diagnostics Database (aka the ‘Rot Bot’) is now ready to accept the first case study submissions to ‘populate’ the site. Go to : <http://www.therotbot.com>

With comments/questions please contact: Dr. Jonathan S. Schilling  
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2004 Folwell Avenue  
University of Minnesota, St. Paul, MN 55108  
email: [schilling@umn.edu](mailto:schilling@umn.edu) – phone: 612-624-1761

## **Wood Machining Institute Berkeley/California Celebrates Twenty-Five Years**

**Communicated by Fellow Ryszard Szymani**

January 2009 marks the twenty-fifth anniversary of the Wood Machining Institute and its publication, *Wood Machining News*. From its inception, the Wood Machining Institute has been an independent international center organized to collect, evaluate and disseminate information in the field of wood machining and provide consulting services.

Both the Institute and the *Wood Machining News* came into existence in response to the growing need for technology transfer from research laboratories to industry. During the 1970's and early 1980's, one of the most respected research centers in wood machining was at the University of California, Berkeley. The work there was led by the late Professor Fred E. Dickinson and by Professor C.D. Mote, Jr., now President of the University of Maryland. I consider myself very fortunate to have had the opportunity to study under the direction of these two exceptional men. In particular, the research on the dynamics and stability of circular and band saws, conducted by Professor C.D. Mote and his graduate students in cooperation with the Forest Products Laboratory, gained international recognition.

The need to provide an international forum for exchange of information was recognized by Professor Dickinson, who with the assistance of Mr. Charles Berolzheimer, Vice President of Manufacturing and Research at the California Cedar Products Company, initiated international seminars on wood machining. The first ten International Wood Machining Seminars were organized by the UC Forest Products Laboratory and Department of Mechanical Engineering, Berkeley, California.

### ***Workshops and In-Plant Seminars***

With the support of Professor Dickinson and Professor Mote, I started to develop the workshops on the design and operation of circular and band saws. These workshops were offered annually at the UC Forest Products Laboratory (1980-1983) and then at the Forest Industries Machinery Show and Clinic (now Wood Technology Clinic and Show) in Portland, Oregon. Until the present the workshops were organized annually by the Wood Machining Institute immediately prior to the Portland Wood Technology Clinic and Show. The 23rd Annual WMI Workshop on Design, Operation and Maintenance of Circular and Band Saws was held at the Holiday Inn, Portland, OR, in March 2008. In addition to the annual workshops, the Wood Machining Institute has offered in-plant seminars on sawing technology, wood machining and cutting tools, machine safeguarding and worker safety. The Institute also continues to offer in-plant seminars on advances in sawing technology, cutting tools, machine guarding and worker safety.

### ***International Conferences***

During the last twenty-five years, as Director of the Wood Machining Institute, I have either organized or served as Program Chair of several international conferences. Among them were the ten International Conferences on Sawing Technology, the seven international conferences on Scanning Technology and Process Optimization in the Wood Industry (sponsored by Miller Freeman, Inc., publishers of Wood Technology). Also included were the Tenth, Eleventh, and Twelfth International Conferences on Scanning Technology and Process Optimization

in the Wood Industry; CIFAC '92, CIFAC '94 and CIFAC '96; the First, Second, and Third International Symposia on Computers in Furniture and Cabinet Manufacturing; and the 15th International Wood Machining Seminar.

### ***Wood Machining News***

The idea of publishing Wood Machining News would not have been realized without moral support and contribution from Professor Dickinson, then Director Emeritus of the Forest Products Laboratory. During the first year of the newsletter publication Professor Dickinson contributed an article describing the wood machining seminar series held at the University of California. Professor Gotthold Pahlitsch and Professor Ernst Salje also contributed an article about research and conferences on wood machining held at the Technical University of Braunschweig, Germany.

Wood Machining News is a truly international newsletter in the wood machining field, with subscribers from 23 countries. It provides the latest information about sawing technology, planing and sanding operations, production of veneer and chips, and equipment associated with these operations, reporting on new machining processes and software, cutting tools, machine guarding and worker safety as well as developments in scanning technology and process optimization, one of the most rapidly growing areas of technological development. This issue is the 151st in the series, marking the completion of 25 years of bi-monthly publications of the Wood Machining News.

Many things in the lumber industry have changed during the last twenty-five years. Some issues have been resolved, and many new challenges have arisen. With the current global economic crisis there are many challenges ahead for the wood industry and associated industries. However, the need for timely access to the latest technical information remains as urgent today as it was twenty-five years ago.

### **Bamboo as Carbon-Sink - Fact or Fiction?**

#### **Communicated by Fellow Walter Liese**

Bamboo is often considered as a plant with an extraordinary potential for carbon sequestration and therefore for mitigating climatic change. It is argued that bamboo is not likely to be significantly better than trees, and that much more research is needed to establish the true potential of bamboo for carbon sequestration. For example, the assumption of bamboo's high sequestration potential is derived mainly from the fast growth of the individual culm during its expansion phase. However, the impressive biomass of such a young culm does not originate from its own photosynthesis, but derives from the energy produced by older

culms in previous years and stored as carbohydrates in their culms and rhizome system. At the beginning of the growth season this energy will be mobilized and transported to the growing culm.

The individual culm has a limited lifetime of 7-10 years, and thereafter its biomass and the carbon contained will be deteriorated biologically into its origins, among them also CO<sub>2</sub>, released into the atmosphere. Furthermore, the gregarious flowering of some species, often world-wide and followed by their death, can constitute a massive CO<sub>2</sub> production. On the other hand, prolonged sequestration of carbon is provided through the great variety of bamboo products that range from the manifold constructions to pulp; many of these uses serve the daily needs of over 1.5 billion people. Although the carbon sequestration of bamboo forests is not likely to influence the mitigation of global warming as much as some protagonists have been arguing, the importance of bamboo forests and plantations for an environment-friendly and sustainable production of food, fibre and energy, and their environmental services including soil stability and waste-water management, important for adaptation to climate change are undisputed.

## **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 perspective
- \* 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 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.

*Frank Beall*

**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: [frank.beall@berkeley.edu](mailto:frank.beall@berkeley.edu)**

# IAWS



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