A Report from
The Fourth International Wood Science Symposium

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The Fourth International Wood Science Symposium was held at Puspiptek Campus, Serpong, Indonesia, on 2-5 September 2002, following the three previous successful symposia. The first was held in Uji, Kyoto, Japan, in December 1996, the second in Serpong, Indonesia, in November 1998 and the third in Uji, Kyoto, Japan, in November 2000. The symposium was organized by the Research Center for Physics, Indonesian Institute of Science (LIPI). This symposium was one of several activities under the Core University Program in the Field of Wood Science which was sponsored by the Japan Society for the Promotion of Science (JSPS). The symposium was attended by researchers from the universities, research institutes, and companies from both Japan and Indonesia. The objective of this symposium was to discuss the research results obtained by collaborative research, and to share up to date information pertaining to a wide variety of research subjects in wood science and technology, mainly between Japanese and Indonesian scientists.

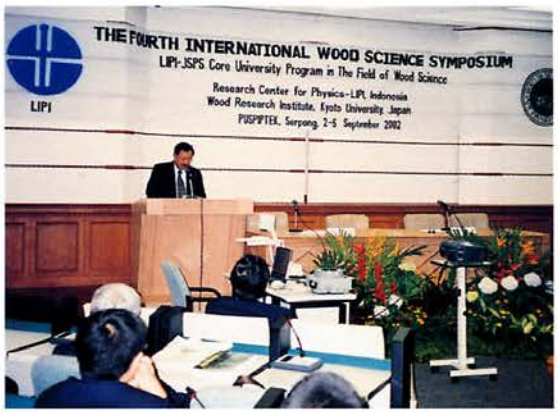
The total number of papers presented was 127, which consisted of 2-keynote lectures, 1 invited paper, 72 papers on Wood Material Science and 52 papers on Wood Biomass technology and Wood Bioscience. All papers were compiled in Proceedings of the Fourth International Wood Science Symposium. This symposium was attended by 55 Japanese scientists who came from 17 universities, research institutes and companies, 4 Malaysian scientists, 1 Turkish scientist, 1 French scientist and 120 Indonesian scientists from 24 universities, institutes and companies. Representatives from LIPI and Kyoto University also attended this symposium.

In the opening ceremony there were official greetings from the coordinators, Dr. Achiar Oemry, Head of the Research center for Physics-LIPI, Prof. Yuji Imamura as the Japan Sub-coordinator of the LIPI-JSPS Core University Program in the Field of Wood Science, and the Head of LIPI was represented by Dr. Anung Kusnowo as the Deputy of Science Technology of LIPI.

Following the opening ceremony, there was a press conference at the VIP room. The press conference was attended by Dr.

Welcome sign board of the symposium

Exchange of a souvenir from Prof. Norimoto to Dr. Achiar Otmry



Official greeting in opening ceremony given by Dr.Achiar Oemry

A. Kusnowo, Prof Misato Norimoto (Director of Wood Research Institute, Kyoto Univ.), Mr. H. Mohammad Mansur (The Chairman of the Indonesian Pulp and Paper Association), Prof. Y. Imamura and more than 10 journalists from Indonesian newspapers and television stations.

The presentation of papers was started by two keynote addresses. Mr. H.M. Mansur delivered a lecture with the title "Present conditions and prospects of the pulp and paper industry in Indonesia", focusing on the problem of raw materials for pulp and paper caused by forest fires and illegal logging. The second keynote address was delivered by Dr. Takahisa Hayashi from WRI, Kyoto Univ. with the title "Promotion of plant growth by cell wall engineering.

Interview by press

Three parallel sessions were held in National Research Council (DRN) conference rooms in Serpong, because of too many papers to present in a two-day symposium. The Wood Material Science Session was separated into two parallel conference rooms and one session of the Wood Biomass Technology/Wood Bioscience in another conference room. During the symposium, many personal/unofficial meetings were held in the venue.

On the first day, the symposium sessions were finished at about 17:00. The participants took photographs together in front of the symposium hall as mementos, and all participants moved to the German Center Building, Bumi Serpong Damai for the banquet. The banquet party was fantastically commemorative. All participants enjoyed Indonesian cuisine, some participants sang and danced together. Dr. Imam Wahyudi from IPB (Nagoya University alumnus) interestingly guided this banquet in English as well as in Japanese.

On the second day of the symposium, the invited paper was delivered by Dr. Tsuyoshi Yoshimura (WRI, Kyoto Univ. Japan) with the title "Termite symbiosis: What can we learn from the gut microecosystem?". After all presentations were finished, Prof. Kohei Komatsu and Dr. Achiar Oemry closed the symposium. Hopefully we will meet you again at The Fifth International Wood Science Symposium that will be held in Kyoto, Japan, on 2004.

Registration at entrance of conference building

After all oral presentations were finished in the two-day symposium in Serpong, almost all overseas and some Indonesian participants went to the Bedugul Botanical Garden on Bali Island for a two-day scientific trip, to see the beautiful wet highland plantations. Plantations at the Bali Botanical Garden are different from those at the Bogor Botanical Garden because the Bali Botanical Garden is located in highland. The lake panorama in this area is also very beautiful.

Hopefully, the Fourth International Wood Science Symposium in Serpong will be a special memory for all participants.

Remarks on the 4th IWSS

Dr. Toshiaki Umezawa, WRI, Kyoto Univ.

In the light of the recent global deterioration of environment, production and sustainable utilization of wood or lignocellulosic material will become more and more important to establish a sustainable society in 21st century. The 4th International Wood Science Symposium (IWSS) was held with the subject "Sustainable Utilization of Tropical Forest Resources".

Following the previous 3rd IWSS held in November 2000 in Kyoto, the organizing committee of the 4th symposium started two years ago, and Dr. Sulaeman Yusuf has been in charge as the chair of the committee. From the Japan side, Professor Kohei Komatsu, WRI, Kyoto Univ. who was the chair of the international academic exchange committee of WRI, supported the Indonesian organizing committee until the end of FY 2001. Then, Prof. Yuji Imamura took over the chair and helped the Indonesian committee from the Japan side. The Indonesian organizing committee members who set aside their regular jobs for months and dedicated themselves to the organization, and no wonder, the symposium was well-organized, and the presentations, many of which were done beautifully using liquid crystal displays, proceeded very smoothly. In addition, after the symposium, a tour to inspect the LIPI Botanical Garden in Bali was held, which was also perfectly organized by Dr. Bambang Subiyanto and other Indonesian committee members. These efforts of the organizing committee are highly appreciated by all the attendants.

The 124 regular papers were presented, and intensive discussion was made regarding the results obtained by the collaborative research and to find new research fields in wood science and technology.

It should be noted that many scientists and students who were not registered as the member of the Cooperative Project supported by JSPS attended the symposium. Furthermore, the numbers of presentations increased by 40% compared with the 3rd symposium. The high interest in production and sustainable utilization of wood by the related scientists together with the global society encourage us to proceed with our lines of the JSPS-

Prof.Imamura, greeting in the opening ceremony

LIPI cooperative project in the Field of Wood Science.

Again, I really appreciate the effort of the Indonesian organizing committee, and rally hope that the JSPS-LIPI Core University Project will contribute the establishment of sustainable global society based on the most important renewable resource, wood or lignocellulosics. Also, I really hope that more new data in the field will be presented in the next symposium to be held in 2004 in Kyoto.

All the participants of the symposium

Impressions of the 4th IWSS

Dr. Myrtha Karina
Research Center for Physics, LIPI

Dr. Bambang Prasetya, Dr. Myrtha Karina, Dr. Umezawa and Prof. Kuwahara (From left) in the Banquet.

It has been six years since the 1st International Wood Science Seminar was held in Kyoto on December 6-7, 1996. Time runs so quickly, like a supersonic jet! It was really nice to meet everybody here again, a good chance not only for all of the participants, particularly, but also among Indonesian participants themselves. Even though they reside in the same country, they hardly meet each other during the whole year like this. On this occasion, students met their professors, scientists met with their colleagues, others met their partners to be, and many other possibilities. They discussed not only their past, current, or future research work but also their personal matters. Yes, borderless topics of interest! To attend this symposium, most of the participants traveled a great distance and took valuable time from their busy schedules, but everybody showed happiness, friendliness, and active involvement until the end of the symposium.

At the welcoming dinner on September 1, I discovered that a lot of newcomers and young participants were among us, even though most of the participants were very familiar to me. It seems to me that the LIPI - JSPS Core University Program attracts many researchers and young scientists among the institutions and universities involved. By joining the program, they are able to get acquainted with people outside of their own surroundings and find people in all different fields of work and attitude. Different ways of life and culture were also topics heard during the symposium, especially in coffe breaks and other leisure times.

Despite getting older, well-known participants showed their enthusiasm for this symposium, no matter how tight the schedule was. The organizing committee, involving both Indonesian and Japanese member teams, collaborated to make this symposium possible and well organized. The task of organizing an international symposium like this was not an easy one. Without their good cooperation and understanding, the program could not have been assembled, for which we were all really indebted.

On the first day when the registration commenced I was surprised by the thickness of the published proceedings with its total of 527 pages! Compare it with the 1st proceedings, with only 156 pages. No wonder that the number participants increased almost four times from the 1st seminar in Uji, Kyoto. In that first symposium, there were only 45 participants from Japan and Indonesia, while in this 4th International Wood Science Symposium, there were 180 participants who came from France, Indonesia, Japan, Malaysia, and Turkey. Just for fun, how many sheets of paper did the organizing committee have to purchase for this proceedings? Supposing 180 proceedings were printed for this purpose, at least 95 boxes of paper (with 500 sheets each) must have been required, excluded the misprints and everything else.

Divided by the two big fields of interest, namely Wood Material Science and Wood Biomass Technology/Wood Bioscience, there were 8 (machinery, properties enhancement, drying, deterioration-preservation-termites, adhesives, glulam and joints, boards-panel-composites, and others) and 11 topics (genetics, biochemistry, mycorrhiza, degrading fungi-enzymes, anatomy, tree growth, other fungi, bio-composite, bio-remediation, pulping, extractives) respectively, presented in the symposium. The various contributions at this symposium emphasized not only the significant findings, but also the gaps in knowledge about the various problems involved. Lessons drawn from this symposium will, hopefully, pave the way for new and even more stimulating investigations. This symposium must have been valuable and fruitful for our profession, even though the time available was so limited. We will probably have a 3-day symposium next time ...

I am sure that everybody left this symposium with the feeling that it was scientifically and personally very rewarding. I hope that we will be able to meet you all again in beautiful Kyoto in 2004!

Discussion and talk in the symposium

Program of the Fourth International Wood Science Symposium, September 2-5, 2005, Serpong, Indonesia

Keynote Address 1 & 2, Chairman : Bambang Prasetya & Takahisa Nakai

Present condition and prospect of pulp and paper industry in Indonesia
H.M. Mansur

Promotion of plant growth by cell wall engineering
Takahisa Hayashi

Wood Material Science , Chairman: Nobuaki Hattori

Machining properties of stressed and non-stressed wood of *Acacia mangium*, *Acacia auriculiformis* and *Hevea brasiliensis* (F)
M. Hamami Sahri, Tan Wee Seng, Semsolbahri Bokhari

Slanted-elastic pressure nosebar: The new pressure mechanism of a rotary lathe (F)
Edi S. Bakar, Remy Marchal

Wear characteristics of high speed steel (HSS) and carbide bits in routing some Indonesian woods (I)
Wayan Darmawan, E.S. Bakar, Chiaki Tanaka, T. Ohtani, K. Hayashi

Wood Material Science (Continued)
Chairman : Masafumi. Inoue

Creep behavior of wood in unstable states – in relation to the mechano sorptive creep (I)
Chika Takahashi, Yutaka Ishimaru, Ikuho Iida, Yuzo Furuta

Determining numbers of water molecular layers in linggoa wood (*Pterocarpus indicus* Willd.) at atmospheric temperature (F)
Yosias Gandhi

Dielectric relaxation of heat-treated wood (I)
H. Sugimoto, M. Norimoto

Dimensional stabilization of oil palm using smoke heat treatment (F)
Takaya Nomura

Wood Material Science (Continued)
Chairman : Wayan Darmawan

Fire protection of a laminated veneer lumber joint by carbon phenolic spheres sheeting (I)
Subyakto, T. Hata, I. Ide, T. Yamane, S. Kawai

Fire retardant of treated Agathis wood (F)
Wahyu Dwianto, Subyakto

Influence of temperature on the transverse behaviour in water-saturated state of tropical wood species (F)
Sandrine Bardet, Jacques Beauchene, Joseph Gril

Mechanism of permanent fixation of radially compressed wood by steaming or heating (F)
T. Higashihara, T. Morooka, M. Inoue, M. Norimoto

Wood Material Science (Continued)
Chairman : Zaidon Ashaari

On a master curve for strain recovery vs steaming time obtained under superheated steam (I)
T. Morooka, K. Oshima, M. Norimoto

Physical and mechanical properties of densified oil palm wood (I)
Ihak Sumardi, Entang Rasyid

Physical properties of wood in unstable states (I)
Y. Furuta, K. Kanayama, I. Iida, Y. Ishimaru

Present state of the techniques for nondestructive evaluation of wood products (I)
Yoshihisa Fujii, Yoshiyuki Yanase

The effect of heating temperature on physical and mechanical properties of compressed Indonesian bamboo (I)
Bambang Subiyanto, Eka Mulya Alamsyah

Transverse compression and heat fixation of oil palm (I)
Masafumi Inoue, Takaya Nomura

Wood/Bamboo nail for timber construction (I)
Masafumi Inoue, Takuro Mori

Wood Material Science (Continued), Chairman: Joseph Gril

Color change of wood during high temperature drying (I)
Kazuo Hayashi, Masatoshi Sugimori, Kazuya Yamashita

Green veneer sorting to improve drying performance (F)
Wahyudi, Peter Vinden, Grigory Torgovniko

Industrial application of hybrid drying of wood using HF heating and hot air (F)
Yoshinori Kobayashi, Yasuo Kawai, Misato Norimoto and Orlando R. Pulido

Kiln drying of lumbers cut from stressed wood of planted *Acacia* spp. (F)
Zaidon Ashaari, Mohd. Hamami Sahri, Saedah Ahmad, Oyak Ona

Moisture movement in large size lumber during HF heating and hot air drying (F)
Yasuo Kawai, Yoshinori Kobayashi, Misato Norimoto

Steam injection drying of laser-incised Sugi square lumber (I)
N. Hattori, K. Kuribara, K. Ando, S. Kitayama, H. Yamauchi, Y. Kawai, Y. Kobayashi

The combination of shed and kiln drying resulted in good quality of mangium lumbers (F)
Efrida Basri, Kazuo Hayashi, Rahmat

The effect of some physical treatments on the drying properties of some tropical hardwoods (F)
Trisna Priadi

Wood Biomass Technology/Wood Bioscience
Chairman: Hiroyuki Kuroda

Establishment of *Daphne odora* cell culture producing stereochemically unique lignans (I)
Tomoya Okunishi, Naohiro Takaku, Patcharawadee Wattanawikkit, Norikazu Sakakibara, Shiro Suzuki, Fukumi Sakai, Toshiaki Umezawa, Mikio Shimada

Genetic transformation study of important tropical forest tree species (*Eucalyptus urophylla*, *Acacia mangium* and *Pometia pinnata*) for trait improvement (F)
Enny Sudarmonowati

Plantlets regeneration of *Acacia salicina* through organogenesis (F)
Sumaryono, I.J. Mc. Farlane

Regeneration system for *Robinia pseudoacacia* (I)
Tomoyuki Nakatsubo, Shiro Suzuki, Vincent L. Chiang, Toshiaki Umezawa, Mikio Shimada

Taxonomy of the genus Coptotermes of urban area in Asia based on the DNA sequences of mitochondrial COII and 12SrRNA genes with reference to their morphology (I)
Yoko Takematsu, H. Yuzawa, M. Ohkuma, T. Yoshimura, T. Kudo

Wood Biomass Technology/Wood Bioscience (Continued)
Chairman: Takefumi Hattori

A new glucose metabolism in wood-rotting fungi (F)
Erman Munir, Takefumi Hattori, Mikio Shimada

Biosynthesis of heartwood substances in a model plant - First *in vitro* norlignan formation (I)
Shiro Suzuki, Tomoyuki Nakatsubo, Toshiaki Umezawa, Mikio Shimada

Biosynthetic pathway for heartwood syringil lignans and antitumor podophyllotoxin (I)
Norikazu Sakakibara, Shiro Suzuki, Toshiaki Umezawa, Mikio Shimada

Towards molecular mechanism in stilbenoid biosynthesis (I)
Hiroyuki Kuroda

Wood Biomass Technology/Wood Bioscience (Continued)
Chairman : Yadi Setiadi

Evaluation of ectomycorrhiza on forest seedlings for Leuser National Park buffer ecosystem reforestation (I)
Tengku Sabrina, Enrawan, Fauzi, Asmarlaili Sahar Hanafiah

Status of research on mycorrhiza arbuscula on tropical tree species (F)
Irdika Mansur, Yadi Setiadi, Ricksy Prematury

Study on arbuscular mycorrhizal fungi diversity surround the rhizosphere of *Gonystylus* spp., *Dyera* spp. and *Shorea* spp in peat swamp forest group (I)
Hanna Artuti E., Dwi Astiani, Wiwik Ekyastuti

The influence of arbuscular mycorrhizal fungi and seedling medium on growth of Tectona grandis from tissue culture in acclimatization phase (I)
Ceccp Hidayat

Using several media carrier in mass inoculant production of arbuscular mycorrhizal fungi (I)
Ceccp Hidayat

Utilization of lipid and fatty acids as a carbon source by ectomycorrhizal fungi (I)
Takefumi Hattori, Akira Ohta, Masayuki Itaya, Mikio Shimada

Wood Biomass Technology/Wood Bioscience (Continued)
Chairman : Yuji Matsumoto

Activity of laccase in *Acacia* wood meal substrate by white rot fungi with different nitrogen sources (I)
Yuyus Kusnadi, Tami Idiyanti, Lisman Siuryanegara, Bambang Prasetya

Biobleaching of *Acacia mangium* kraft pulp using laccase secreted by local isolate PSM01 in combination with hydrogen peroxide bleaching (I)
B. Prasetya, T. Idiyanti, L. Suryanegara, T. Watanabe, M. Kuwahara

Pre-treatment of empty fruit bunch of oil palm by white-rot fungi for the utilization of its components (F)
Syafwina, E.D. Wong, Y. Honda, T. Watanabe, M. Kuwahara

Production of laccase and manganese peroxidase by white-rot fungi using extracts from oil palm empty fruit bunch fibre as inducer (I)
Lisman Suryanegara, Yuyus Kusnadi, Tami Idiyanti, Bambang Prasetya, Takashi Watanabe, Masaaki Kuwahara

The study on lignolytic enzymes from soil worm and its role on bleachability on kraft pulp (I)
Myrtha Karina, Tami Idiyanti

Utilization of oil palm empty fruit bunch to produce lignin degrading enzyme by white rot fungi (F)
Tami Idiyanti, Syafwina, B. Prasetya, T. Watanabe, M. Kuwahara

Wood Biomass Technology/Wood Bioscience
Chairman: Elizabeth A. Widjaja

Anatomical investigation of wood fiber and vessel orientation in *Acacia mangium* (I)
Yoshiyuki Ogata, Minoru Fujita, Tadashi Nobuchi, M. Hamami Sahri

Effect of desiccation on the viability of *Lagerstroemia speciosa* (L.) Pers pollens (F)
Nurul Sumiasri, D. Priadi, J. Rijadi, E. Sudarmonowati

Effect of pruning to cambial activities on teak (*Tectona grandis* L.F.) (F)
Rudi Hartono, Kurnia Sofyan, I.K.N. Pandit, Supriyanto

Effect of the sap flow rate requirement on the growth of *Cryptomeria japonica* D. Don standing tree (I)
Takahisa Nakai, Tetsuya Nakao, Hisashi Abe

Factors affecting the growth and preservation of *Aleurites moluccana* Willd pollens (F)
E. Sudarmonowati, D. Priadi, J. Rijadi, N. Sumiasri

Microbiril angle in *Agathis* and its effect on wood quality (I) Wood density and Young's moduly relationships to the MFA (F)
Imam Wahyudi, Hiroyuki Yamamoto, Yusuf Sudohadi, Takashi Okuyama

Preliminary investigation of reaction wood formation in *Agathis* (I)
Imam Wahyudi, Tadashi Nobuchi, Minoru Fujita, Yoshiyuki Ogata, I. Ketut Nuridja Pandit

The role of bark in the forest fire (F)
Agus Sulistyo Budi, Nani Husein, Erwin

Wood Material Science, Chairman : Musrizal Muin

Acoustic emission (AE) monitoring of dry-wood termite feeding activities under various relative humidity (RH) conditions (F)
Yuliati Indrayani, Y. Yanase, Y. Fujii, T. Yoshimura, Y. Imamura

Comparative susceptibility of Malaysian and Japanese wood species against termite attack (I)
Peng-Soon Ngee, Ai Tashiro, Chow-Yang Lee, Tsuyoshi Yoshimura

Detection of acoustic emission (AE) generated by the feeding activity of drywood termite (I)
Yoshiyuki Yanase, Yoshihisa Fujii, Shogo Okumura, Tsuyoshi Yoshimura, Yuji Imamura

Determination of the effects of calcium precipitating and wood preserving N,N-hydroxynaphthalimide (NHA) on leachability of boron by microassay based on colorimetry (I)
Saip Nami Kartal, Frederick Green III

Effect of Boucherie method treatment on termite resistance of laminated bamboo surat (*Gigantochloa robusta*) (I)
Rudi Dungani

Effects of steaming treatment of Indonesian wood on termite feeding behavior (F)
Sulaeman Yusuf, Mohamad Gopar, Shuichi Doi

Efficacy of plywood with glue from liquefaction process against subterranean termites *Coptotermes curvignathus* Holmgren in laboratory (F)
Farah Diba, E. Wardenaar, F. Febrianto, D. Nandika

Foraging activities of *Coptotermes spp.* (Isoptera: Rhinotermitidae) in building environment (I)
Ahmad Said Sajap

Wood Material Science (Continued)
Chairman: Saip Nami Kartal

Fundamental evaluation on termicidal activity of various woody vinegar liquids from charcoal making (F)
Kazuhiko Sameshima, Maho Sasaki, Isako Sameshima
Physical and biological properties of phenolic-resin treated particleboard after exposed to outdoor weathering (F)
Yanni Sudiyani, Sudijono, Sulaeman Yusuf
Profile and effect of process parameters in the preservative treatment of wood-based composites using supercritical carbon dioxide (I)
Musrizal Muin, Kunio Tsunoda
Safety and durability of newly developed chitosan-copper-complex (CCC) and its effectiveness to fungal and termite attacks (F)
Ikuo Furukawa, Tomonori Kobayashi

Wood Material Science (Continued)
Chairman: Pipin Permadi

Some evidences of damage caused by subterranean termites *Coptotermes* spp. on buildings and trees in Bogor and its around (F)
Paimin Sukartana
The feeding preference of dry-wood termite (*Cryptotermes cynocephalus Light*) at four bamboos species (I)
Sasa Sofyan M., Achmad Sulthoni, Soenardi P.
The resistance of CF_4 – plasma treated tropical woods against white-rot (Trametes versicolor L. Fr. Pilat) attack (F)
Nyoman Wistara, F. Denes, R.A. Young
The resistance of treated and untreated Indonesian wood species to marine borers (I)
Mohammad Muslich, Nurwati Hadjib

Wood Material Science (Continued)
Chairman : Yoko Takematsu

The resistance of twelve wood species against six decaying fungi (F)
Sihati Suprapti, Djarwanto
Vulnerability of some wood species stored in Bogor, Indonesia, to dry-wood termite *Cryptotermes cynocephalus* (F)
Paimin Sukartana, Y.I. Mandang
Water dependence of Japanese subterranean termites (I)
Tomoe Nakayama, Tsuyoshi Yoshimura, Yuji Imamura
Weathering performance of wood impregnated with phenolic-resin (F)
Yanni Sudiyani, Yuji Imamura, Shuichi Doi

Wood Material Science (Continued)
Chairman: Hiroyuki Yano

Direct utilization of *Acacia mangium* bark as waterproof wood adhesives (F)
S. Ogawa, Cicilia M.E. Susanti, H. Yano
The use of tannin from *Acacia mangium* Willd. in adhesive systems of Medium Density Fiberboard (F)
Lina Karlinasari, Edmone Roffael
Trial production of plywood in factory scale with NR-g-PS as an its adhesive (F)
Marga Utama

Invited Paper, Chairman: Wasrin Syafii

Termite symbiosis: What we can learn from the gut microecosystem?
Tsuyoshi Yoshimura

Wood Material Science, Chairman: Bambang Subiyanto

Development of two-direction glued laminated joint panel by Japanese cedar (F)
Yasuo Kataoka, Ken Shimizu, Kohei Komatsu, Shinjiro Takino, Takuro Mori
Development of wooden semi-rigid column-beam joints by utilizing wedges and bolts (F)
Kohei Komatsu, Shinjiro Takino, Takuro Mori, Yasuyo Kato, Makoto Nakatani, Akihisa Kitamori, Yasuo Kataoka
Effects of reinforcement by high-strength fiber for steel-insert-type glulam drift-pined joints (I)
Shinjiro Takino, Kohei Komatsu, Takuro Mori, Makoto Nakatani
Experimental study on the tensile strength of Sugi and Douglas fir mixed glulam (F)
Takuro Mori, Kohei Komatsu, Shinjiro Takino, Yasunobu Noda, Kouji Harada, Kimiaki Watanabe

Wood Material Science, Chairman : E.D. Wong

Bending and shear properties of low density particleboard laminated with zephyr of tali bamboo (F)
Sudijono, Subyakto
Binderless wood chip insulation panel materials for building use made from wood processing residues and wastes (F)
Noburo Sekino, Yoshihiro Kawamura
Characteristic of *Paraserianthes falcataria* - polymethyl methacrylate composite prepared by gamma irradiation technique (F)
Marga Utama, Togar Ritonga, Agus Nurhadi
Composite of wood flour-recycle polypropylene II: The role of maleic anhydride and dicumyl peroxide in the strengthening of the composites (F)
Fauzi Febrianto, M.D. Putri, A.H. Iswanto, B. Tambunan, Y. Imamura
High strength microfibrillated plant fiber materials (I)
Hiroyuki Yano, Antonio Norio Nakagaito, Susumu Nakahara
Innovation in the manufacturing technology of cement-bonded board (F)
Bedyaman Tambunan, Dede Hermawan, Sri Hari Murni
Internal bond and shear properties of wood-based panel products (F)
Hideto Miyagawa, Shigehiko Suzuki

Wood Material Science (Continued)
Chairman : Dede Hermawan

Manufacture and properties of kenaf composite panels (F)
Shuichi Kawai, Y. Okudaira, Min Zhang, Jianying Xu, Ragil Widyorini
Physical and mechanical properties of zephyr board made from gombong bamboo (F)
Mohamad Gopar, Subyakto
Physical and mechanical property of oil palm board (F)
Takaya Nomura
Production of three-layered structural board made from sugi strand and recycled wood particle (F)
Shigehiko Suzuki, Yasushi Kojima

Wood Material Science (Continued)
Chairman : Noburo Sekino

Properties of particleboard manufactured from tension wood of *Acacia auriculiformis* (F)
E.D. Wong, M. Hamami Sahri, K.H. Puah
Properties of poly lactic acid composites with wood in relation to fiber pre treatment technique (F)
Fauzi Febrianto, M. Yoshioka, N. Shiraishi
The bonding mechanism of kenaf core binderless particleboard (I)
Ragil Widyorini, Jianying Xu, Takashi Watanabe, Shuichi Kawai
The chemical analyses and XRD of palmyra fibre and modification on its surface (I)
Mimpin Sitepu, Hiroaki Yoshida

Wood Material Science (Continued)
Chairman : Fauzi Febrianto

Alternative species of raw materials for wood-based industries in Indonesia (F)
Made Sri Prana, Junus Kartasubrata, N.W. Soetjipto, Irfan Afandi
Analysis of calory values and characteristies of the fuel wood quality preferred by the Malinau forest community of East Kalimantan (F)
Harlinda Kuspradini, Sipon Muladi, Sulaeman Yusuf, Gyosuke Meshitsuka
Humidity control using charcoals (I)
Yasuji Kurimoto
Potency of bamboo at Ngada District, Flores – Towards a bamboo industry establishment (F)
Elizabeth A. Widjaja, Syamsu Barhiman, Gabriel Manek, Hamzah
Prospect of Mimba (*Azadirachta indica*) for wood working products (I)
Efrida Basri, Saefudin, Jasni
Zero-emission processes of oil palm utilization – Case study of oil palm mill in PT. Kertajaya, Lebak, Banten Province (F)
Bambang Subiyanto, Subyakto, Shuichi Kawai

Wood Biomass Technology/Wood Bioscience
Chairman: Erman Munir

Do mushrooms have anti diabetes potential (F)
T. Basuki, Rizna T. Dewi, L.B.S. Kardono
Preliminary cultivation properties of *Termitomyces* sp. (I)
Yutaka Tamai, J. Watanabe, J.Y. Cha, I.G.K. Tapa Darma, I.G.P. Wirawan, M. Terazawa
Preliminary study on producing taxol endophytic fungi from *Taxus sumatrana* (F)
Rizna T. Dewi, T. Basuki, P.D.N. Lotulung, W. Triwahyuni, L.B.S. Kardono, S. Tachibana
Some studies on the blue stain of benguet pine (*Pinus kesiya* Royle ex Gordon) (F)
I.G.K. Tapa Darma, Yutaka Tamai, Minoru Terazawa

Wood Biomass Technology/Wood Bioscience
Chairman : Yutaka Tamai

Gellous cellulose-hemicellulose composite of *Ocimum americanum* seed (F)
Jun-ichi Azuma, Hiroko Miyake, Masahiko Sakamoto, Rike Yudianti, Lucia Indrarti
Bioconversion of biomass wastes into multifunctional recyclates – Utilization of saw dust as artificial soil matrixes (I)
Minoru Terazawa
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Impressions of the 4th IWSS

Dr. Takuro Mori, WRI, Kyoto Univ.

The 4th International Wood Science Symposium was held from September 2 to September 3, 2002 in Serpong, Indonesia. In my opinion this symposium was highly fruitful.

On the first day, the symposium was declared open by Dr. Achiar Oemry from the Research Center for Physics LIPI. The opening ceremony started with friendly greetings from the symposium staff. The first lecture was presented by Dr. H.M.Mansur, Chairman of the Indonesian Pulp & Paper Association with the title "Present conditions and prospects of the pulp and paper industry in Indonesia". It illustrated the importance of paper in our every day lives. Dr. Takahisa Hayashi from the Wood Research Institute, Kyoto University, presented the second lecture with the title "Promotion of plant growth by cell wall engineering". This speech roused great interest among the listeners since the subject was also published in a newspaper. After a short break, the event continued simultaneously in 3 rooms. Among the questions to the presenters, most of the inquiries were about the possibility of implementing the new findings to meet the particular needs of the listener's countries. It was interesting to notice that most of the speeches exceeded the scheduled time due to the great interest generated.

Prof. Komatsu, former chair, presenting his lecture

After the day's presentations, a banquet was offered to the participants. The delicious food, seasoned with music and dance contributed to a joyful integration of all the participants, who experienced a worthwhile and enjoyable banquet.

Dr. Mori in the mealtime(center)

On the second day, the first lecture was presented by Dr. Tsuyoshi Yoshimura from the Wood Research Institute, Kyoto University, with the title "Termite symbiosis: What we can learn from the gut micro-ecosystem". Considering the increased number of questions, the great interest in this theme was evident. During the break time, a lot of people approached the presenters about their subjects.

After all the speeches were given, a closing ceremony marked the end of the symposium. Finally a souvenir picture of all participants was taken.

I would like to thank the important contribution of the LIPI-JSPS Core University Program in promoting a strong connection of researchers from various countries. As a participant I had the opportunity to gather information about new studies.

Views of the 4th IWSS Wood Biomass Technology / Wood Bioscience Session.

Dr. Hiroyuki Kuroda, WRI, Kyoto Univ.

In the Wood Biomass Technology/Wood Bioscience Session, 24 introductory and 30 full papers were presented in room 2 during the Conference. The session covered a wide range of research fields. The reported papers are briefly summarized in the rearranged categories as follows.

In tree breeding technology, some fast growing tropical trees were able to transform with *Agrobacterium* and regenerate plantlets. For preservation of genetic resources, factors affecting pollen viability were also analyzed. Commercially available transformants are probably possible in the near future and discussion will be required on the practical application. Mycorrhizal fungi promote nutrition uptake from the rhizosphere into trees, which promotes tree growth. Their practical application promises improved growth of some important tropical trees. The mycorrhizal novel carbon metabolism was also discussed. In wood quality, wood grains, effect of pruning and reaction wood in some tropical trees were anatomically analyzed. Microfibril angles were discussed in relation to mechanical wood properties. Sap flows were described in relation to the growth of a conifer stem. From the viewpoint of forest preservation and the ecosystem, bark resistance against forest fire was anatomically categorized in various tropical trees.

In forest products, cultivation trials for an edible mushroom and fungal production of taxol were reported. Physiologically active pharmaceuticals are one of the attractive targets in tropical trees. Various tropical trees were examined, e.g., whether they were useful for diabetes mellitus and anticancer drugs. Some of the research revealed the stereo-chemical structures and got into the molecular mechanisms of the action. Although the studies have just started, we hope that new drugs will be coming from such investigations. Another important point of the extractive research was wood durability, because most fast-growing trees are less tolerant against termites and wood rotting fungi. Several durable trees, leaves and heartwood extractives were examined to see whether they contained durable substances, especially against termites and wood rotting fungi. Some of the active extractives were studied for their stereo-chemical structures. Tissue culture was also used for secondary metabolite

Dr. Kuroda during lunch time

production studies. Biosynthetic and molecular studies on the metabolites were also reported. Biochemical modification with genetic engineering will be more significant for modulating extractives for the effective usage.

In biomass utilization, pulp production is an important industry for the country from the economical point of view. Blue stain disorder on pine chips was analyzed by moisture and temperature controls. Non-woody materials and branch-wood were used for expanding and saving wood resources. In one investigation the polysaccharide structure of an herb plant was characterized. Several new ideas were introduced cooking and bleaching, such as silica removal, organic solvents as a cooking liquor, bio-pulping and bio-bleaching. Sustainable biomass utilization is an important mission in tropical regions. Some of the methods will reconcile economics and ecosystem. Reports on biological bleaching ranged from a fungal survey to enzyme production. Wood rotting fungi and soil worms and their enzymes were used for bio-bleaching and digestion of biomass wastes. The enzyme production was improved by screening strains and by optimization of the culture conditions. Fungal metabolism was also discussed especially in view of the carbon source.

In spite of the tight schedule, coffee/tea break gave us a chance for active discussion and for learning each other.

Impression of the 4th IWSS

Prof. Masaaki Kuwahara, Akita Prefectural Univ.

Both change and continuation are equally important for the development of a project. Seven years have passed since the JSPS Core University Program in the Field of Wood was started in 1996. The program has developed gradually and steadily.

What are the changes in this program? Firstly, the research fields covered by this program have been expanded. Research reports on utilization of agricultural by-products and wastes were presented in this symposium. Genetic study of engineering to enhance propagation of wood cells was among the other research fields recently joining the program. Secondly, the number of members and countries joining this program has increased. This program started with a limited number of participants. Now, over one hundred scientists participate in the program. Currently, the most pressing problem is how all members can share the benefits of joining this program.

Then, what is the continuation of the program ? Undoubtedly, this program is based on enthusiasm for research in wood sciences. In this symposium, I was strongly impressed by the energy of the participants to develop their research. However, I am afraid that the program reached a stationary phase in its progress.

Research products have accumulated since the start of the program. And it seems that this promoted the association in wood science research both in Indonesia and Japan. Namely, the Indonesian Society of Wood Science was established and collaboration with research groups in Japan has also been promoted.

Then, what is the next step of the program? We have several choices at hand. Currently, the development of a bi-lateral to multi-lateral program is one of the choices. Association with Pacific-rim countries is also one of the ways of the development. However, we need the collaboration of countries joining as partners, not simply as participants.

Every time I stay in Indonesia, I always remember Dr. Nilyardi Kahar, the past director of the R & D Centre of Applied Physics, LIPI and the coordinator of Indonesian side in the General Exchange Program of JSPS. He died just before this core university program started. He always reminded us of the importance of collaboration between Asian and Japanese scientists in the wood science field. His enthusiasm pushed us to start this program. We must remember the efforts of persons who constructed the base for collaborative research.

The next symposium will probably be held in Kyoto. I hope to see old friends and colleagues again as well as newcomers. And I sincerely hope this program will develop to the next advanced stage.

Friendship linkage in the banquet

Meeting in 2002 Fiscal Year for Representatives of Core University Program Using SCS (Space Collaboration System)

Meeting in 2002 fiscal year for representatives of Core University Program was held on 23 of October, 2002. Thirty five representatives, professors from Hokkaido to Kyushu Universities, involved in the JSPS-LIPI Core University Program in the Field of Wood Science had talk and discussion using SCS. Mr. Enomoto, Head of Asian programme Division in JSPS, attended the meeting from The University of Tokyo gave positive and informative comments on the Core University Program. First experience using SCS for the meeting ended successfully.

BALI Excursion
at the 4th International Wood Science Symposium

Dr.Takahisa Nakai, Shimane Univ.

Participants in Bali excursion.

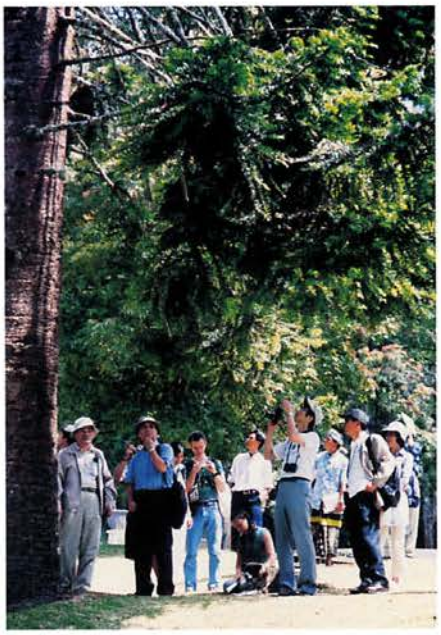
Early on the morning of September 4, 2002, we left the guesthouse of LIPI to the Jakarta airport by bus, then flew to Denpasar airport in Bali by airplane, arriving before noon. The coordinator of the Bali excursion gave us a warm welcome there, and we checked in to the Bali Beach Hotel and had lunch at the Warung be Pasih restaurant. Our excursion started in the afternoon by bus.

● Day01 (4th September 2002)

First, we visited a traditional housing compound in Batuan. Next, we visited a rice terrace in Tegallalang. Finally, we viewed sculptures in the wood carving center of Kemenuh and the Kechak dance in Batubulan. The schedule for the first day was finished. We returned to Sanur and had dinner in the Abian Boga restaurant. We watched the Recon dance, which is a folk dance of Bali, at that restaurant.

● Day02 (5th September 2002)

In the early morning, we left the hotel for the Bali botanical garden in Bedugul under the guidance of a police patrol car (We were quite surprised. Such a thing is not done in Japan). After the description of the botanical garden by the curator, we walked through the garden. Following lunch, we visited the fruit market, and then we visited the Ulundanu temple at Lake Bratan. Finally, we visited the temple in Tanahlot. Our 2-day excursion was finished. We returned to Sanur and had dinner, where the main dish was a lobster weighing 500 grams, in the Warung be Pasih restaurant. We enjoyed a shadow picture show at the restaurant.



Tour in Bedugul Botanical Garden.

Excursion in Bali

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