



Establishment of a New Institute: Research and Development Unit for Biomaterials - Indonesian Institute of Sciences (LIPI)

Dr. Bambang Subiyanto and Dr. Subyakto
R & D Unit for Biomaterials, LIPI

The Research and Development Unit for Biomaterials, Indonesian Institute of Sciences, was established in 2002 based on the Chairman of Indonesian Institute of Sciences Decree No.1020/M/2002, dated June 12, 2002. The institute is located at Cibinong Science Center, LIPI Complex, Cibinong, Bogor, West Java, about 13 km north of Bogor. The staff members are mainly from the Laboratory of Composite Materials, Research Center for Physics,

Serpong, and a few from other institutions in LIPI. The institute is directly under the Deputy of Life Sciences, and the daily activity is under supervision of the Research Center for Biotechnology.

Our vision is to become the vanguard institute for research and development of biomaterials and a strategic partner for industry facing global competition. Our missions are to do research and development on advanced and strategic materials from natural bio-resources in order to increase added value, to seek alternative of bio-resources, to develop environmentally-friendly processes and to cooperate with users to apply our research results.

Among the ongoing projects of the institute are:

1. Development of wood-adhesive from renewable materials with low formaldehyde emission
2. Utilization of solid waste of agro and forest industries for building materials
3. Development of novel materials and methods of wood deterioration control in harmony with the environment
4. Characterization and enhancement of properties of fast growing, lesser known, and mixed tropical wood species
5. Characterization and utilization of natural fibers for raw materials of bio-composites industry
6. Quality enhancement of handicraft industry utilizing bamboo and other materials

In addition to doing research and development, we also do activities such as cooperative research with industries and other institutes, materials testing, consultation services, feasibility studies, and making equipment.

The Research and Development Unit for Biomaterials has 35 members, consisting of 5 doctors, 3 masters, 4 bachelors, 3 technicians, 8 administrative staffs, and 12 others.

The facilities of the institute includes office and laboratory buildings totaling about 1,700m², land area of 20,000 m², testing equipment, processing equipment, workshop, field testing facilities for termites and weathering,



Building of R & D Unit for Biomaterials, Cibinong

and bamboo garden.

We are the coordinators for the Indonesian side of The Japan Society for Promotion of Science (JSPS) in the Core University Program in the field of Wood Science (1996-2006). Leading scientists from 25 universities in Japan, 2 universities in Malaysia and 25 universities and institutes in Indonesia are currently members of this program.

As a new institute, we are looking forward to collaboration with other institutes (government or private), universities, and industries in Indonesia,

Japan or other countries in terms of cooperative research, funding, or other related activities.

Address:

Research and Development Unit for Biomaterials - LIPI

Jl. Raya Bogor Km 46, Cibinong, Bogor 16911, Indonesia

Tel. 62-21-87914511,

Fax. 62-21-87914510.

E-mail: komposit@cbn.net.id



Signboard of the new institute

***In Vitro* Regeneration and Genetic Engineering of 'mangium' (*Acacia mangium* Willd), 'sengon' (*Paraserianthes falcataria* (L.) Nielson) and 'nyatoh' (*Palaquium hexandrum* Burk)**

Dr. Nurul Sumiasri

Research Centre for Biotechnology, LIPI

Research cooperation under the LIPI-JSPS Core University Program in the Field of Wood Science for fiscal years 2003-2006 has started. In this project, the Indonesian researchers involved are Nurul Sumiasri, Dody Priadi, N. Sri Hartati and Enny Sudarmonowati; all of them are from the Research Centre for Biotechnology LIPI, Cibinong-Indonesia. From the Japanese side are Nobuo Yoshizawa (Utsunomiya University), Takahisa Hayashi (Wood Research Institute, Kyoto University) and Shinso Yokota (Utsunomiya University).

Three species were selected for the

research: *Acacia mangium* Willd, *Paraserianthes falcataria* (L.) Nielson and *Palaquium hexandrum* Burk, all of them are indigenous plants of Indonesia native to Moluccas and known as commercial timbers. The selection of these species was also related to the forestry program in Indonesia. Since PELITA IV (Fourth Five-Year Development Plan: 1983-1988), one of the program of the Indonesian Government in the forestry sector has been Industrial Forest Estates (HTI). Twenty-eight species have been recommended for use in this program, including the three species in this program, of which *Acacia mangium* Willd and *Paraserianthes falcataria* (L.) Nielson have the highest priority for development. One of the objectives of the program is to fulfill the timber needs for wood industries in Indonesia and abroad. *Acacia mangium*, locally known as mangium, and *Paraserianthes falcataria* (L.), locally known as sengon, are both belong to Fabaceae family of fast growing and multipurpose trees species

which play an important role in improving soil fertility due to their association with nitrogen fixing bacteria, and therefore are also recommended by Indonesia Government for reforestation and greening. In addition, mangium and sengon are promising tree species to provide raw materials for industry such as pulp, paper, wood laminating, light construction, particle board and other purposes. *Palaquium hexandrum* Burk (Sapotaceae Family), which is locally known as nyatoh, provides timber for heavy construction and furniture.

It has been reported that mangium plantation in Sumatera (Subanjeriji) to suffer from a diseases caused by fungi (*Phytium* sp, *Altenaria* sp, *Fusarium* sp.). Sengon in Java (Kediri) has been seriously attacked by a stem borer insect species (*Xystrocera festiva* Pascoe) which can cause up to 80% damage. An Improvement program of these species would be to obtain diseases-resistant mangium and sengon and to reduce the content of lignin, so that the use of chlorine for waste treatment in pulp and paper industry could be reduced. One of the problems of propagating nyatoh is that the growth rate is very slow and attacks of leaf rust (*Aecidium* sp) and pink diseases (*Corticium salmonicolor*) occur. A genetic improvement program for this species attempting in vitro regeneration has been established to increase the growth rate and diseases resistance. So far, the study of genetic engineering of forest



Paraserianthes falcataria (L.) Nielson ('sengon') tree

tree species in Indonesia is still limited, while tree breeding takes a long time due to the long life cycle of tropical trees, so genetic engineering and transformation will shorten the genetic improvement program.

The purposes of our research is to develop appropriate procedures for *in vitro* propagation and genetic transformation of mangium, sengon and nyatoh, and the production of transgenic plants containing genes of interest. The significance and expected results are development of appropriate *in vitro* propagation procedures including somatic embryogenesis of these species, appropriate genetic transformation procedures for these species, transgenic mangium, sengon and or nyatoh organs

or plantlets possessing marker genes and selectable genes and certain genes of interest such as disease resistance genes and high growth rate genes. The researches are carrying out in Indonesia and Japan.

The research started from April 2003. Results obtained up to June 2003: seeds of both mangium and sengon, collected from plus trees, were germinated *in vitro* for preparing shoot multiplication. To solve the browning problem of nyatoh, several composition of media have been tried. Shoot tips obtained from shoot multiplication of *in vitro* mangium and sengon have been available as materials for preliminary genetic transformation work. Plasmid of pBE2113/CtCc1AcDNA and pBE2



Xystrocera festiva Pascoe
(stem borer) attacking 'sengon' tree

113/AaXEG2cDNA containing Xyloglucanase gene and Cellulase gene provided by WRI have been introduced to shoot tips of mangium and sengon using the procedure developed by RC for Biotechnology-LIPI to determine whether the protocol is also suitable for this purpose. This research is ongoing.

Workshop and Expose 'Fundamental Research Scientific Results of the LIPI-JSPS Cooperation Program'

Dr. Toshiaki Umezawa
WRI, Kyoto University

On July 17 and 18, 2003, Workshop and Expose on Fundamental Research Scientific Results of the LIPI-JSPS Cooperation Program was held at LIPI headquarter in Jakarta. Four JSPS core university programs are ongoing in cooperation with LIPI, including our program in the field of wood science. Several Japanese scientists in each pro-

gram attended the workshop and explained the outlines of their program. From our program, Prof. Imamuara and Dr. Umezawa (WRI, Kyoto University) were invited to the workshop. From JSPS, Professor Keisuke Taira (Inspector General, Professor Emeritus of the University of Tokyo, Ocean Research Institute), Mr. Tsuyoshi Enomoto



LIPI head quarter in Jakarta

(Head, Asian Programme Division), Mr. Hideshi Kobayashi (Deputy Head, Asian Programme Division), and Ms. Masami Kudo (Research Fellowship Division) were invited.

The workshop and expose was held in commemoration of the 37th LIPI anniversary, and the purposes were:

- 1) To expose the public to scientific research result of the LIPI-JSPS cooperation program
- 2) To develop networking among scientists in the LIPI-JSPS cooperation program
- 3) To share experiences and information on managing the Core University Program in Indonesia

On the first day, Professor Taira began by giving a talk about the

(continued to page 5)



From left to right, Dr. Bambang Subiyanto, Dr. Endang Sukara, Dr. Sulaeman Yusuf, Dr. Wahyu Dwianto, Prof. Keisuke Taira, Prof. Yuji Imamura, and Dr. Toshiaki Umezawa

International Symposium on Sustainable Utilization of *Acacia mangium*

The International Academic Exchange Committee,
WRI, Kyoto University

Last September, the Fourth International Wood Science Symposium (IWSS) was held very successfully at Puspiptek Campus, Serpong, Indonesia. The IWSSs have been held in every second year and the next IWSS will be held in 2004, but not this year. However, it is important to continue to share up-to-date information among scientists from Japan and South East Asian countries. Also, because more than 7 years have already passed since the start of the Core University Program in the Field of Wood Science, it is good time to review the Core University Program activities of the past 7 and a half years

and identify future research targets in the field of wood science and technology. In this context, the International Academic Exchange Committee, WRI, has planned a special symposium on the sustainable utilization of one of the most important, multi-purpose fast growing tree species, *Acacia mangium*, as follows.

Aim and Scope:

On the threshold of the 21st century, it is critically important to establish the sustainable production and utilization of forest resources. In addition, establishment of basic science and

technology dealing with the lignocellulosic materials, including fast growing trees, is demanded to promote the wood industry of Indonesia and other south-eastern Asian countries.

The objective of the symposium is to provide a scientific forum for discussing the latest research progress in the studies of fast growing trees, especially *Acacia mangium*, and 28 invited speakers will give presentations in relation to the following topics: overview of *Acacia mangium*, Biotechnology of *Acacia mangium*, pulping of *Acacia* spp., *Acacia mangium* bark utilization, Wood-based materials from *Acacia mangium*, biological deterioration of *Acacia mangium*.

Presentations:

Overview

Acacia mangium the Prospective Wood in Indonesia: Challenge for A New Resource
[Bambang Subiyanto, Anita Firmanti and Pipin Permadi](#)

Potential Utilization of *Acacia mangium* - Its Future in Indonesia

[Myrtha Karina](#)

Current Status of *Acacia mangium* Planting, Research and Utilization in Malaysia

[Ee Ding Wong, Yahya Siti-Norralakmam and Abdul-Kader Razali](#)

Wood Formation

Some Characteristics of Wood Formation and Future Trends of Plantation in *Acacia mangium*

[Tadashi Nobuchi](#)

Wood Structures and Wood Properties Relationship In Planted *Acacias*: Malaysian Examples

[Mohd. Hamami Sahri and Semsolbahri Bokhari](#)

The Effect of the Growth Rate on the Surface Growth Stress and the Residual Stress in the Logs of the *Acacia* species

[H. Yamamoto, T. Okuyama, M. Yoshida, I. Wahyudi and T. Ona](#)

Heart Wood Proportion in *Acacia* Species of Various Age Groups Planted in Sabah

[Mohd. Hamami Sahri and Semsolbahri Bokhari](#)

Biotechnology

Functional Genomics in Legume plants

[Daisuke Shibata](#)

Screening for the Species with High Plant Regeneration Ability in The Genus *Acacia*

[Yuko Itakura and Masahiro Mii](#)

The Genetic Resources of *Mangium* (*Acacia*

International Symposium on Sustainable Utilization of *Acacia mangium*

JSPS-LIPI Core University Program

October 21-22, 2003
Wood Composite Hall, Wood Research Institute
Kyoto University, Uji, Kyoto, JAPAN

Session 1: Overview
[Bambang Subiyanto, Myrtha Karina, Wong Ee Ding](#)

Session 2: Wood Formation
[Tadashi Nobuchi, Mohd. Hamami Sahri, Hiroyuki Yamamoto](#)

Session 3: Biotechnology
[Daisuke Shibata, Masahiro Mii, Nurul Sumiasri, Hanna Artuti Ekamawanti, Yanni Sudiyani, Kiki Nurtjahja](#)

Session 4: Pulping
[Kazuya Ito, Takanori Miyanishi, Ridwan Yahya, Sipon Muladi](#)

Session 5: Bark Utilization
[Hiroyuki Yano, Sulaeman Yusuf, Bambang Prasetya, Subyakto](#)

Session 6: Wood-Based Materials
[Yoshikatsu Matsumoto, Wahyu Dwianto, Andi Detti Yudianti, Pipin Permadi](#)

Session 7: Biological Deterioration
[Koichi Yamamoto, Chartchai Khanongnuch, Darmono Taniwiryo](#)

Connected by
Space Collaboration System

For Sustainable Humanosphere !

Organized by Wood Research Institute and
Radio Science Center for Space and Atmosphere

Contact address: T. Umezawa, WRI, Kyoto Univ., Uji, Kyoto 611-0011, JAPAN
Phone: +81-774-38-3625, Fax: +81-774-38-3682, e-mail: tumezawa@kuwri.kyoto-u.ac.jp

mangium Willd) In Indonesia: Its Development and Problem

Nurul Sumiasri and Dody Priadi

Exploration of Bacterial Nitrogen Fixation on Different Ages of *Acacia mangium* Willd. Seedlings

Hanna Artuti Ekamawanti, Dwi Astiani and Wiwik Ekyastuti

The Effects of Various Growth Media on the Performance of *Acacia mangium* Willd Seedling on in Vitro Culture During the Acclimatization Periods

Yanni Sudiyani, Dody Priadi and Nurul Sumiasri

The Fine Structure and Selected Cytochemistry of Ungerminated Basidiopores of *Pluteus cervinus*

Kiki Nurtjahja1 and Donald G. Ruch

Pulping

Clonal Forestry of *Acacia* Hybrid in Vietnam and Clonal Orchard Management by DNA Marker

Keiji Tomita and Kazuya Ito

Kraft Pulping of *Acacia Mangium*

Takanori Miyanishi and Keigo Watanabe

Utilization of the Branch Including the Bark of *Acacia mangium* Willd as Raw Material for Pulp and Paper Manufacture

Ridwan Yahya

Prospective of *Acacia mangium* Willd as Raw Material of Pulp and Paper in Indonesia

Sipon Muladi, Zainul Arifin, Enos Tangke Arung, Yuliansyah, Rudianto Amirta, R. Patt

Bark Utilization

The Direct Conversion of *Acacia mangium* Bark into Waterproof Wood Adhesives

Hiroyuki Yano, Sosuke Ogawa and Cicilia M. E. Susanti

Characterization of Polyphenols from Tropical Trees Species *Acacia auriculiformis* Cunn. Ex Benth.

Sulaeman Yusuf, Koh Hashida and Seiji Ohara

Utilization of Bark from *Acacia mangium* Willd as Bonding-Components in Some Applications in Wood Composite

Bambang Prasetya, Subyakto, Bambang Subiyanto, Sudijono, Sulaeman Yusuf and Euis Hermiati

Development of Binder Less Particleboard from *Acacia mangium* Bark

Subyakto, Lisman Suryanegara, Sudijono, Mohamad Gopar, Bambang Prasetya and Bambang Subiyanto

Wood-Based Materials

Report of *Acacia* Hybrid Plantation in Sabah, Malaysia

Yoshikatsu Matsumoto

Mechanical Properties, Fire Performance and Termite Resistance of *Acacia mangium* Willd.

Wahyu Dwianto, Sudijono, Ikuho Iida, Subyakto and Sulaeman Yusuf

The Utilization of Branches and Top of Tree of *Acacia mangium* Wood as Fiberboard

Andi Detti Yuniarti and T.A. Prayitno

Utilizing *Acacia mangium* for Construction

Materials

Anita Firmanti, Surjono Surjokusumo, Kohei Komatsu, Shuichi Kawai and Bambang Subiyanto

Biological Deterioration

Decay Resistance of *Acacia mangium*, *A. auriculiformis* and Hybrid *Acacia* wood

Koichi Yamamoto, Nguyen Trong Nhan and Do Thi Ngoc Bich

Lignocellulolytic Enzymes from Thermotolerant White Rot Fungus *Coriolus versicolor* Cultured on Tropical Fast-Growing Tree Wood Meal

Chartchai Khanongnuch, Teerapong Saowapark, Saisamorn Lumyong, Yoichi Honda and Takashi Watanabe

Biodegradation of Oil Palm Empty Fruit Bunches by *Ganoderma lucidum* and Its Waste Product Potential Use

Darmono Taniwiryo

Language: English

Dates: October 21 and 22, 2003

Venue: Wood Composite Hall, Wood Research Institute, Kyoto University, Uji, Kyoto 611-0011, Japan

Contact Address:

T. Umezawa, WRI, Kyoto University, Uji, Kyoto 611-0011, Japan

Fax: +81-774-38-3625,

E-mail: tumezawa@kuwri.kyoto-u.ac.jp

(from page 3)

overview program and activities of JSPS, while Dr. Lukman Hakim (Deputy Chairman for Scientific Services, LIPI) overviewed the program and activities of JSPS-LIPI cooperation from the Indonesia side. Next, two or three presentations from both the Japan and Indonesian sides of each program were made so that the programs were outlined: the multilateral program on Marine Science (Japanese Core University: Ocean Research Institute, The University of Tokyo), the Core University Program in the field of Wood Science (Japanese Core University: WRI, Kyoto University), the Core University Program on Earth and Environmental Science (Japanese Core University: Graduate School of Environmental Earth Science, Hokkaido University), and the Multilateral Program on biotechnology (Japanese Core University: the International Center for

Biotechnology, Osaka University). Lastly, Mr. Enomoto talked in detail about the JSPS Core University Program, especially possible changes in the core university program in relation to the reorganization of JSPS. Thus, he explained that JSPS will be reorganized to become the independent administrative institution, and that JSPS will be subjected to outside evaluation after the reorganization. In relation to this, the core university programs will be subjected to assessment of results by JSPS, and he presented the parameters for the assessment. The Japanese scientists are getting used to this kind of assessment, while his talk seemed to have an impact on Indonesian participants. Indonesian scientists asked him many questions, and he answered them one by one very clearly. On the second day, a general discussion was held regarding the LIPI-JSPS cooperation.



Dr. Erman Munir
received a special award from LIPI

This was really a good opportunity to learn the outlines of other core university programs and to share up-to-date information among LIPI, JSPS, and scientists from Japan and Indonesia.

Lastly, it should not be forgotten is at the Workshop Dr. Erman Munir, a graduate of WRI, was honored by LIPI for his outstanding scientific achievement during his PhD course in WRI.

Outlook of the JSPS Core University Program in the Southeast Asian Region

Dr. Ee Ding Wong
Universiti Putra Malaysia



Currently, there is a strong global concern over issues pertaining to biodiversity conservation, carbon sequestration, the greenhouse effect, watershed management, and natural resource extraction. As developed countries have exhausted most of their natural forest resources and have realized the importance of such resources by now, developing nations continue to exploit these resources for their economic development. In Malaysia, management of forests is needed to ensure the sustainability of forests and wood-based industries. Malaysia is striving to achieve total utilization of this invaluable resource. Research and development is focused on efficient utilization of wood-based materials through optimal processing techniques and product design. Less stringent demands, both in terms of quality and quantity of the raw materials, could reduce the rate of forest depletion. Forest plantations planted with fast-growing timber species will become our supplementary source of raw materials in the near future. Efforts are also being made to utilize other non-conventional lignocellulosic materials such as oil palm and kenaf fibres to reduce the pressure on natural forests.

Toward this end, Japan has significantly contributed to the development

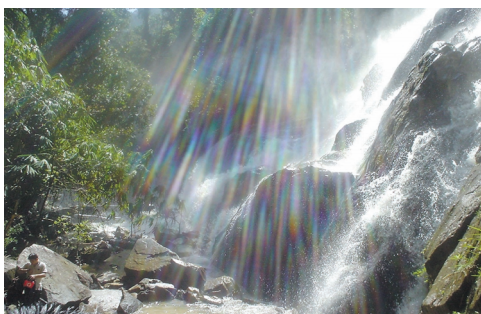
of forest management and wood based industries in Malaysia. Organizations such as the Japan International Research Center for Agricultural Sciences (JIRCAS), the Japan International Cooperation Agency (JICA), and the Japan Society for the Promotion of Science (JSPS) are the main agencies providing technical expertise and funding opportunities. In addition, there are numerous bilateral collaborations between Japanese and Malaysian universities, research institutions and corporations.

The Faculty of Forestry, Universiti Putra Malaysia (UPM) participated actively in the International Cooperation Research based on the JSPS Cooperation Programmes with Southeast Asian Countries under the General Exchange System from 1984 to 1993, with the Wood Research Institute (WRI) of Kyoto University as our counterpart. This marked the beginning of the linkage between WRI and UPM, whereby significant progress in wood science and technology has been achieved via information exchange and technology transfer through communication and scientist exchange. Despite the brief discontinuation of collaboration under the JSPS Program from 1994 to 1999, the linkage between WRI and UPM has remained strong and active throughout the years. In 2000, Malaysia was formally accepted as a partner into the JSPS-LIPI Core University Program, and a Memorandum of Understanding was signed between WRI and UPM to facilitate collaborative research activities.

Currently, 19 universities from Japan, 26 universities from Indonesia, and 2 universities from Malaysia

(UPM and Universiti Sains Malaysia, USM) are involved in this Core University Program. Since the acceptance of Malaysia came under the umbrella of JSPS-LIPI Core University Program within the existing budget, only limited number of Malaysian researchers could participate in this program at the moment. In 2002, one scientist each from Universiti Teknologi Mara and Forest Research Institute of Malaysia (FRIM) became the team members of an existing research project. In a recent discussion with representatives from local universities and research institute, all of the nine national universities (campuses) and a FRIM have expressed keen interest in participating in the JSPS Core University program. A directory for Malaysian scientists who have committed to participate in this program is now being compiled. Malaysian scientists who have been given the opportunity to participate in the current phase of the JSPS-LIPI Core University Program have unanimously reported this multilateral scientific collaboration among Japan, Indonesia and Malaysia to be a most rewarding and wonderful experience. It is hoped that this JSPS Core University Program will be expanded to include more public and private universities and research institutions in Malaysia in time to come.

On a bilateral collaboration basis, JSPS Core University Program creates an opportunity for scientists from developing nations to learn and tap the expertise of their Japanese counterparts through scientist exchanges, seminar organization and scientific publications. Every meeting and discussion proves to be an excellent avenue for exchange of ideas, knowledge and technical skills. Through short-term visits to Southeast



*Forest for water and life (Sg. Bot, Karak, Perak)
(Courtesy: Dr. Manohar Mariapan, UPM)*

Asian countries, the Japanese scientists disseminate their scientific information effectively through seminars and lectures, and render advice to local scientists and scholars based on ground observations and inter-personal interactions. Such visits also provide an opportunity for them to enrich their experience and understanding of the tropical forests and the related industries. Furthermore, local scientists obtain access to the sophisticated research facilities which are not available domestically, and conduct part of their research in Japan. Therefore, this is a win-win collaboration which benefits both parties.

From the experience of multilateral collaboration among Japan, Indonesia and Malaysia since 2000, it is felt that

the JSPS Core University Program has achieved a bigger goal by creating an avenue for scientists to deliberate and resolve issues of common interests in the region. Such multilateral international collaboration will not only help to optimize the utilization of limited financial resources, but also improve the human resource capacity in the region. While Indonesia and Malaysia look forward to continued support and assistance from Japanese counterparts in upgrading our level of technical know-how in utilization of lignocellulosic materials, it is also our sincere hope that JSPS Core University Program will be extended to Southeast Asian countries such as Thailand, the Philippines and Vietnam, who share many common features not only in

terms of climate and natural resources, but also culture and lifestyle in this part of the world. Current scientific activities in this program cover all fields of wood science and technology, including material science, physics, chemistry, biology, genetics and environmental science from a macroscopic viewpoint. Following the merging of WRI with Research Institute of Space and Radio Wave, Kyoto University, in the coming year, one of the expected benefits is evolution of a broader spectrum of research areas, particularly regarding environmental aspects. This more intensified multidisciplinary interaction would definitely help to develop a more holistic approach in ensuring sustainable forestry development in the Southeast Asian region.

My Experience During Stay in Japan for Two Months

Ms. Yuliati Indrayani
Forestry Faculty, Tanjungpura University

I stayed in Japan from January 17 to March 18, 2002, for the purpose of doing research on the topic of development of integrated technology for high-performance utilization of tropical forest resources. My research work is acoustic emission (AE) monitoring of dry-wood termite feeding activities under various relative humidity (RH) and temperature conditions. The dry wood termites that I need for my research are not available in the laboratory. The species of termite is the Japanese dry wood termite *Cryptotermes domesticus* Haviland, which is gated from Iriomote Island. Obtaining the termites was difficult because they were still in wood blocks, so I had to cut the blocks.

Besides doing research, I had a chance to participate in the Japan Science and Technology Corporation International Symposium, "Bio-recycle Research on Termites and Their Symbiotic Microorganisms" in Saitama, Japan, and stayed two nights in Tokyo. From this symposium I have more fully

recognized important fields of termite research. The next two days, I visited the Forestry and Forest Product Research Institute and stayed one night in Tsukuba. In the Forestry and Forest Product Research Institute, I met Dr. Koichi Yamamoto and also had a chance to see the Tsukuba field test site of FFPRI and the Wood Protection Laboratory.

I think this was a great opportunity for me, because through this program I could brush up my knowledge which is important for my profession as a lecturer and researcher in the field of deterioration control.

During my two months in Japan, we had winter season. This was the first time for me to experience this season. Something happened with the skin on my face, such as my skin got dry, but just for two weeks. Even though it was winter, I visited many historical temples in Japan.

Another interesting experience was that, I had a chance to take a Japanese language course. This was important



Cutting a wood block to find *Cryptotermes domesticus* Haviland

for me, because during my two-month stay in Japan I had to do everything by myself, such as buying food for lunch and dinner. One Japanese sentence that I will always remember is, "Kyou wa samui desu ne"

Finally, I would like to thank to JSPS for giving me the opportunity to visit the WRI, Kyoto University, Japan. I would like to express my deep appreciation to Prof. Y. Imamura as my host scientist and Dr. T. Yoshimura who took care me during my staying in Japan. Also, I would like to express my appreciation to Dr. Y. Fujii, Mr. Yanase and Ms. Nakayama who assisted me through their invaluable guidance in my research work activities. I also appreciate Prof. Misato Norimoto, the Director of WRI, Kyoto University and Prof. Kohei Komatsu as the Coordinator of the Core University Program.

Research at the Laboratory of Deterioration Control of WRI under JSPS Post-Doctoral Fellowship

Dr. S. Nami Kartal
Forestry Faculty, Istanbul University, Turkey



As a member of the Forestry Faculty, Istanbul University, Turkey, I am working at the Department of Forest Biology and Wood Protection Technology. I have completed my doctoral thesis in Turkey on fixation and leaching issues of water-borne wood preservatives. After completing my Ph.D. thesis, I worked at the USDA Forest Service, Forest Products Laboratory, Madison, WI, USA as a Post Doctoral Scientist for two years. Since June 2002, I have been working with Prof. Yuji Imamura at the Laboratory of Deterioration Control, Wood Research Institute, Kyoto University as a JSPS (Japan Society for the Promotion of Science) Post-Doctoral Fellow.

My research efforts under the JSPS fellowship have been focused on improvement of leaching characteristics of boron wood preservatives and development of remediation methods for preservative-treated waste wood. We have worked on several fixation systems to limit boron leaching from boron-treated wood to enhance the use of boron compounds as environmentally benign wood preservatives. We first searched for possible synergistic effects of a calcium precipitating agent, *N*'-*N*-(1,8-Naphthalyl) hydroxylamine on inhibition of boron leachability via precipitation of boron in wood. We also have investigated the effect of copolymerization of methyl methacrylate and allyl glycidyl ether on boron release from DOT-treated wood and decay and termite resistance of treated and chemically modified wood by copolymerization. The Second part of our research was focused on the bioremediation of chromated copper arsenic (CCA)-treated wood using liquid cultures of some

Ascomycetes and *Basidiomycetes* fungi and naturally abundant biopolymers, chitin and chitosan.

During first year of our research between June 2002 and June 2003, we submitted 10 papers to international scientific journals. In addition, I have attended three international and one national conferences, namely the 4th International Wood Science Symposium (September 2-5, 2002, Serpong, Indonesia) organized by LIPI-JSPS Core University Program; IAWPS 2003 International Conference on Forest Products, 30th Anniversary of the Korean Society of Wood Science and Technology (April 21-24, 2003, Daejeon, South Korea); International Research Group on Wood Preservation (IRG) 34th Annual Meeting, (May 16-23, 2003, Brisbane, Australia) and The 53rd Annual Meeting of the Japan Wood Research Society (22-24 March, 2003, Fukuoka) and presented papers in these meetings.

The Wood Research Institute has provided me a unique scientific atmosphere with well-maintained equipment and unlimited research possibilities including chemical and literature supply to carry out my projects. In addition, Prof. Yuji Imamura and other members of the Laboratory of Deterioration Control have helped me in my achievements by giving valuable comments and engaging in fruitful discussions on research themes. I truly believe that the distinguished members of the Wood Research Institute have been playing an important role in establishing and developing the research methods in wood science. The Wood Research Institute has not only been investigating wood and wood products

but also trying to explore a new field combining the information of wood science and other fields. One of the institute's main aims is to contribute to the advancement of wood science in accordance with the rapid internationalization of recent years. In particular, with respect to the increasing demands for international exchanges and cooperation in study and research in the fields of advanced science and technology, the institute provides unique research opportunities for scientists with potential by accepting students from abroad and collaborating with visiting researchers. In addition to doing research about my own topics, I have been provided with many opportunities to observe other aspects of the Japanese research and education systems. I have been particularly impressed with the sense of pride that the graduate students have had in their research areas and their endless creativity.

The Committee of International Academic Exchange

Y. Imamura (Chairman),
S. Kawai, T. Umezawa, Y. Honda,
F. Tanaka, and K. Baba

Wood Research Institute (WRI)
Kyoto University
Gokasho, Uji, Kyoto 611-0011, Japan
Tel: +81-774-38-3603
Fax: +81-774-38-3600
E-mail: wri-adm@kuwri.kyoto-u.ac.jp

Title Back:

Illustrated by Tadayoshi Yamamoto,
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and Crafts Association