



Report on the 6th International Wood Science Symposium

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The Sixth International Wood Science Symposium was held in Bali, Indonesia on August 29 to 31, 2005. This was the last symposium of the LIPI-JSPS Core University Program in the field of Wood Science. The program will finish in March 2006. The symposium was organized by the R&D Unit for Biomaterials-Indonesian Institute of Sciences (LIPI) and Research Institute for a Sustainable Humansphere (RISH)-Kyoto University. The theme of this symposium was "Towards an Ecological and Economical Harmonization of the use of Tropical Forest Resources". It is hoped that harmonization of the utilization and production of tropical forest resources will become a reality. The purpose of the symposium was to provide a forum for scientists from Japan, Indonesia and other Asian countries to exchange information on progress with and plans for research, as well as to strengthen cooperation in wood science and technology and environmental science.

The participants were 194 researchers from Japan (77 scientists), Indonesia (109 scientists), Malaysia (2 scientists), and Vietnam (1 scientist). The Japanese participants were from 20 universities from Hokkaido to Kyushu, while the Indonesian participants were from 32 universities and institutions from Aceh (Sumatra), Java, Kalimantan, Sulawesi to Papua. The 2 Malaysian participants were from University Putra Malaysia, and the participant from Vietnam was from the Vietnam Forestry University. Participants from 3 Japanese companies and 1 Indonesian company also joined the symposium.

The symposium began with an address from Dr. Endang Sukara (LIPI) followed by opening remarks from Prof. Hiroshi Matsumoto (RISH), Mr. Hiromichi Endo (JSPS) and Prof. Umar Anggara Jenie (Head of LIPI).

Presented were 2 keynotes, 79 Introductory Papers and 55 Full Papers covering 4 topics: Wood Material Science, Wood Biomass Science, Wood Bioscience, and Environmental Science. The keynotes were given by Dr. Hadi Pasaribu (Director of Forestry Research and Development Agency, Ministry of Forestry Indonesia) and Prof. Gyosuke Meshitsuka (Graduate School of Agriculture and Life Science, The University of Tokyo). At a special session on *Acacia mangium*, 9 papers were presented. All of the papers contained fruitful scientific results and also plans for research involving cooperation between Indonesian and Japanese as well as Asian scientists through this Core University program. All the papers have been compiled in a proceeding. In this symposium, a MOU between the Indonesian Institute of Sci-



Meeting attendees during the opening ceremony

ences, Research Institute for a Sustainable Humanosphere, and PT Musi Hutan Persada was signed.

On day one, after the session had ended, a banquet was held where all participants enjoyed dinner while watching Balinese dances. After the

closing ceremony on day two, all the participants enjoyed another dinner with very attractive and exotic Balinese dances. The JSPS Core University Program meeting was held on day 3 at the Ekakarya Botanical Garden. The principal investigators of each ongoing pro-

ject reported their progress. This was followed by a Young Scientists and Professors meeting, where discussions between young Indonesian and Japanese scientists and Japanese professors were held. The program ended with a sunset dinner at Jimbaran beach.

I believe that this symposium has made a useful contribution to the development of wood science and technology for Indonesia, Japan and other Asian countries. Even though this was the last symposium, hopefully we can propose new ways of cooperating with Japan and other Asian countries (for example, through the Asian CORE Program) so we can continue our joint research in a wider field of studies.



The 6th IWSS participants

Impressions of the 6th IWSS in Bali, Indonesia

Dr. Kenji Umemura
RISH, Kyoto University

On August 29-31, the 6th International Wood Science Symposium (IWSS) was held at the Inna Grand Bali Beach Hotel in Indonesia. The IWSS which is a part of the JSPS-LIPI Core University Program started in 1996. The total number of participants of this symposium was 194, including 77 Japanese and 114 Indonesians. In addition, 2 Malaysians and 1 Vietnamese attended. I had attended the second (Serpong, Indonesia, 1998) and fifth (Kyoto, Japan, 2004) symposiums, so this was my third time. Presentations were made in four sessions. Wood Material, Wood Biomass, Wood Bioscience & Environmental Science, and Acacia mangium. The number of presentations in each session was 75, 29, 34 and 9, respectively. That is, most of the research was on wood material.

In this symposium, I noticed that there were many female researchers from Indonesia. Senior researcher of LIPI then

told me that of the 11 newcomers assigned to LIPI this year, 7 were women. He said that the newcomers were from various fields other than wood science.

After the presentation, meetings of the JSPS Core University Program and Young Scientists-Professors were held in the Bali Eka Karya Botanical garden. In the former meeting, there were interesting reports about research in progress. Subsequently, it was reported that this is the last year of the JSPS-LIPI Core University Program, and an



Participants of the 6th IWSS conference



Researcher presenting paper in the conference

explanation of a new program was given. In the meeting of Young Scientists-Professors, which I attended as a representative of young Japanese scientists, I talked about the international exchange of young scientists and collaborative research between Indonesia and Japan. As some ideas, I introduced the effective use of a satellite office of RISH and artificial Acacia mangium forests in Indonesia. We were able to talk with young Indonesian scientists, and many opinions were exchanged. I think that this meeting was meaningful for young scientists of both countries.

This symposium gave me various precious experiences, and I am deeply grateful to the organizing committee and staff. Finally, I expect to further development by keeping in touch with Indonesian scientists.

6th International Wood Science Symposium: A new sunrise from Bali

Dr. Junji Sugiyama and Ms. Yoko Okahisa
RISH, Kyoto University

The JSPS-LIPI Core University Program in the Field of Wood Science started in 1996 and has reached its final year. Here, in Bali, the 6th IWSS meeting was organized at the Inna Bali Beach Hotel, from August 29th to 31st in 2005, with the theme of "Towards an Ecological and Economical Harmonization of the use of Tropical Forest Resources". The conference had 194 participants, primarily from Indonesia

informative regarding the background, development, and achievements of the collaborative program. Welcoming talks were given by Professor Endang Sukara, Indonesian Coordinator, Deputy of Life Sciences LIPI, Professor Hiroshi Matsumoto, Director of the Research Institute for a Sustainable Humanosphere, Kyoto University, and the Japanese coordinator Professor Yuji Imamura from the same institute. Hon-



Excursion in the Ekakarya Botanical Garden

(114) and Japan (77), but also from Malaysia (2) and Vietnam (1). The Indonesian participants came from 32 universities and institutions from Aceh to Papua, while the Japanese participants came from 20 universities from Hokkaido to Kyushu. The Malaysian participants are from University Putra Malaysia, and a participant from Vietnam came from the Vietnam Forestry University. Participants from industries are from three Japanese companies who sponsored a part of this symposium, and one from an Indonesian company. This statistics well represents the successful organization and continuation of collaborations over a decade.

The opening ceremony was very

honorable speeches were also given by two distinguished guests, Mr. Hiromichi Endo, Head of the Asian Program Division, International Cooperation Project of JSPS and Prof. Umar Anggara Jenie, the Chairman of LIPI.

In view of the fact that this is the finalizing year of the "10-year Core-University program", as one of four new JSPS projects, the "Asian Core Project" was suggested as a possible future framework. The project focuses on the establishment of an advanced cooperative network between experts in Japan and other Asian countries, which is comparable and competitive with European and American networks. With the establishment of sustainable societies, collaboration on the harmonization of economy and ecology in the management of tropical forest resources may be achieved by setting up strong cooperative networks such as between our institute and BMI and LIPI, Indonesia.

During the conference, there were presented 2 keynotes, 79

introductory papers, and 68 full papers covering 4 topics: Wood Material Science (43 introductory/ 32 full papers), Wood Biomass Science (11/18), Wood Bioscience (15/11), and Environmental Science (6/2). Nine papers were devoted to a special *Acacia mangium* session, where novel approaches such as atmospheric and environmental features of the ecology and economy of large tropical industrial plantations were presented.

After the two-day scientific symposium, a business meeting of the JSPS Core University Program was held at another location, the Ekakarya Botanical Garden situated in the middle of Bali. There was also held a ceremony of memorial tree-planting. *Dissochaeta reticulata* Bl., a tree climber, was planted in memory of the JSPS-LIPI Core University program. Four young shoots were planted with name plates by Mr. Endo from the JSPS, Professor Matsumoto and Professor Imamura from the RISH, and Mr. Okamoto, head of the International Academic Collaboration Division, Uji Campus of Kyoto University.

On the way back from the botanical garden, we gathered for a dinner on the shore, where we watched a beautiful sunset. It was indeed the "sunset" of the meeting in Indonesia and of the Core-University project spanning a decade, however, it impressed on us that the time is right to start new advanced projects. In this sense, it was a "sunrise" for our future. Last but not least, we would like to congratulate again the organizing team for this memorial symposium which was completed with great success.



A ceremony of tree planting

The LIPI Chairman visited Kyoto University and JSPS this July

Prof. Toshiaki Umezawa
RISH, Kyoto University



*The welcome party for the
LIPI Chairman of RISH*

This February when the opening ceremony of our satellite office was held in Cibinong, Professor Yuji Imamura, the Japanese coordinator of the Core University Program, met the LIPI Chairman, Professor Umar Anggara Jenie, and invited him to Japan. Prof. Umar accepted the invitation and visited Kyoto University and the JSPS headquarters in Tokyo in the middle of July together with Dr. Endang Sukara, the Indonesian coordinator of the Core University Program, and Dr. Bambang Subiyanto, the Director of the Research and Development Unit for Biomaterials.

The LIPI chairman and his colleagues arrived at Uji in the morning on July 10, 2005, and in the afternoon they visited RISH. First, they met professors of RISH and discussed future collaborations under JSPS's new Asian CORE Program based on the achievement of the on-going Core University Program in the Field of Wood Science. They also made an inspection of several laboratories and facilities of RISH. Then, Prof. Umar Anggara Jenie and Dr. Endang Sukara gave talks about "LIPI and the National Agenda" and "Biodiversity for Sustainable Development - the Case of Indonesia from LIPI's Perspective-", respectively. More than 60 people attended the seminar, including almost all the Indonesian students on the Uji campus, including those not only from RISH but also from other Institutes. Following the discussion time, we had a welcome party for our Indonesian friends. Pictures were taken at the end of the party, and we all had a really enjoyable time.

On July 13, they visited the headquarters of Kyoto University and met Professor Kojiro Irikura, the Vice President of the university. The Indonesian

delegates and Prof. Irikura outlined their international exchange policies, respectively. On this occasion, Prof. Umar Anggara Jenie proposed the exchange of a Memorandum of Understanding (MOU) between LIPI and Kyoto University. We, RISH, and the Research and Development Unit for Biomaterials, LIPI, have already exchanged a MOU at the faculty level, and the present proposal is to expand this to the university level. Prof. Irikura agreed with the proposal immediately, and the exchange of the Kyoto University-LIPI MOU is under way.

Then, the LIPI chairman and his colleagues went to Tokyo and visited the JSPS headquarters. They met Mr. Isao Kiso (Executive Director of JSPS), Mr. Hiroshi Fukai (Director of the International Program Department, JSPS), Mr. Hiromichi Endo (Head of the Asian Program Division, JSPS), and Ms. Fumie Hara (Deputy Head of the Asian Program Division, JSPS). From RISH, Professor Yuji Imamura and Dr. Toshiaki Umezawa attended the meeting together with Mr. Takeshi Okamoto (Head of the International Academic Collaboration Division, Kyoto University) and Mr. Kiyotaka

Tobita (Chief of the International Affairs Section, Kyoto University). First, Professor Imamura outlined the on-going JSPS-LIPI Core University Program in the Field of Wood Science, while Mr. Kiso explained the new JSPS Asian Programs, especially important differences between the new Asian CORE Program and the on-going bilateral Core University Program. Then, Professor Umar Anggara Jenie expressed that LIPI will do their best to support future collaborations between RDUB and RISH, especially in terms of the application of the Asian CORE Program under the principle of an equal partnership. I believe that the meeting was successful and fruitful in terms of our future collaboration.

This is the last fiscal year of the on-going Core University Program, and it was really timely to have the Chairman of LIPI and his colleagues visit early in the fiscal year, so that we could deepen our mutual understanding. In addition, this was a very important opportunity to start preparations for the new JSPS ACORE Program.



The meeting with Prof. Irikura, the vice president of Kyoto University

MOU between RISH, LIPI and M.H.P

Prof. Hiroyuki Yano
RISH, Kyoto University

The sustainable management of forests is becoming more and more important especially in South-East Asia where it supports a harmonization of the ecology and economy of countries. In Indonesia, *Acacia mangium* is a very important fast growing tree, plantations of which cover around one million hectares (ha). Although the planting of *Acacia mangium* was intended to provide a resource for the pulp industry, due to the cost of processing pulp, a new approach to the effective utilization of *Acacia mangium* is needed. In consideration of the increasing social demand for sustainable forest management, solution that achieves a harmo-

nization of ecology and economy is required.

RISH, LIPI, and MHP have exchanged a Memorandum of Understanding (MOU) concerning research on the Sustainable Management of Forests and their Products on Plantations of ACACIA MANGIUM. RISH, the Research Institute for a Sustainable Humanosphere, will contribute to establishing a solar energy-dependent sustainable society amenable to the environment since it is engaged in the innovation of a new field, humanospheric science. This interdisciplinary field is centered in the concept of a humanosphere, which is composed of

four vertical regions of the planet: the human habitat, the forest sphere, the atmosphere, and outer space, in which human activities take place. LIPI, the Indonesian Institute of Science, is responsible for organizing research and development and providing guidance, services and advice to the government on national science and technology policies. M.H.P., PT. Musi Hutan Persada, is an Indonesian

enterprise specializing in timber estates in South Sumatra and acting to develop and manage forest plantations as the ultimate center of Indonesian forestry, which meets all the criteria and standards of international forestry practices.



The MOU was made on the 1st of April, 2005. The objective of this cooperation is to promote collaborative research projects in the area of Sustainable Management of Forests and their Products on Plantations of *Acacia mangium*. The activities to be conducted under the MOU shall include - but are not limited to- such areas of mutual interest as follows:

1. Collaborative research projects
2. Joint seminars
3. Exchanges of expertise and personnel
4. Collaborative scientific projects
5. Other activities mutually agreed upon by the three parties

At the end of the Acacia Session of the 6th International Wood Science Symposium, Bali, Indonesia, on behalf of each party, Prof. Hiroshi Matsumoto, Director of RISH, Prof. Bambang Subiyanto, Head of the Research and Development Unit for Biomaterials and Mr. Joedarso Djojosoebroto, President Director of M.H.P. met and clasped hands in front of the participants (from left to right: Prof. Subiyanto, Prof. Matsumoto and Mr. Djojosoebroto).



Clasping of hands by Prof. Hiroshi Matsumoto, Prof. Bambang Subiyanto, and Mr. Joedarso Djojosoebroto at the end of 6th IWSS conference

= Research Project No. 23 =

Tissue Culture and Molecular Breeding of Fast-Growing Tropical Trees

Prof. Nobuo Yoshizawa
Faculty of Agriculture, Utsunomiya University

Research as part of the LIPI-JSPS Core University Program in the Field of Wood Science for fiscal year 2003-2006 is going on. This project was

started in April 2003 with the goals of providing new ways to prevent global warming.

Forests in Indonesia have been esti-

mated to fix 2 million tons of CO₂ every year. Fast-growing trees play an important role in the fixing of CO₂. Therefore, an increase in the capacity of these trees is considered an effective measure against global warming.

This project is being pursued to: 1) produce transgenic trees highly capable of fixing CO₂ using fast-growing species including Mangium (*Acacia mangium* Wild.) and Sengon (*Paraserianthes falcataria* (L.) Nielsen) and their hybrids, 2) micropropagate these trees



Research in the Sengon plantation in Serpong Botanical Garden

in vitro, 3) examine their wood anatomy and quality, and 4) analyze genetically the new natural products from leaves of conifer trees.

In December 2004, a group in Indonesia led by Dr. Hayashi produced transgenic trees of Mangium and Sengon, which overexpressed the xyloglucanase and cellulose genes, by using the *Agrobacterium* method. Some of the transgenic trees grew very well potentially as a result of accelerated loosening in their cell walls. Next, hybrids of *Acacia mangium* and *A. auriculiformis* were produced in Malaysia. A protein analysis of the structural expression of the genes introduced in these trees is in progress.

Research groups in both Indonesia and Japan carried out the *in vitro* micropropagation of both species using several explants (seeds, stem cuttings, and shoot

tips) and media with various combinations of PGR. As a result, 750 Mangium and 400 Sengon planting materials were obtained. Some 130 Mangium and 30 Sengon trees are being kept at the Serpong Botanical Garden. The proliferation of transgenic trees is also being attempted. Calli were also induced successfully

using petioles, hypocotyls, cotyledons, and embryo axis, but are still in culture maintenance.

For a genetic analysis of the monoterpene compounds in conifer trees, leaf samples were collected from the Serpong Botanical Garden. Head space monoterpenes from needles were detected in *Agathis dammara*, *Pinus merkusii* and *Podocarpus neriifolius*, but not in *Araucaria excelsa*. Monoterpene compounds such as myrcene, limonene, α -pinene and 3-carene were detected. The development of new nat-



Group photo of the Research team from Japan and Indonesia in Sengon plantation

ural products for drugs is in progress.

In September 2005, Japanese researchers visited the 13-year-old Sengon plantation in the Serpong Botanical Garden to study growth characteristics, and measure MOE using tapping and stress-wave velocity methods. Wood anatomy and mechanical properties are now under investigation.

Staff of Research Project No. 23

(Japanese side)

Nobuo Yoshizawa* (Utsunomiya Univ.):

Tissue culture of tropical trees

Shinso Yokota (Utsunomiya Univ.):

Tissue culture of tropical trees

Takahisa Hayashi (RISH, Kyoto Univ.):

Genetic engineering

Toshiaki Umezawa (RISH, Kyoto Univ.):

Heart wood formation in tropical trees

Keiichi Baba (RISH, Kyoto Univ.):

Tension wood formation in transgenic trees

Hiroyuki Yamamoto (Nagoya Univ.):

Characterization of growth between wild-type and transgenic trees

Ryo Funada (Tokyo Univ. Agri. Technol.):

Growth and wood quality in tropical trees

Takeshi Furuno (Shimane Univ.):

Genetic analysis of monoterpenes in tropical conifer trees

Sadanobu Kato (Shimane Univ.):

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Genetic engineering

(Malaysian side)

Nor Aini Ab Shukor (Putra Univ.):

Molecular breeding

= Research Project No. 19 =

Development of Structural LVL from Tropical Wood and Evaluation of its Performance as the Structural Components of Wooden Houses

Mr. Maryoko Hadi

Research Institute of Human Settlements Technology

In Indonesia, the use of woods for building materials has been growing rapidly, dominated by a demand for sawn timbers produced by very old wood species from natural forests. As a consequence, the resources for lumber are decreasing rapidly due to the very long time needed to grow trees for sawn timbers.

To overcome the problems arising from loss of lumber resources, the Japan Society for the Promotion of Sci-

ence (JSPS) organized for Japanese, Indonesian and Malaysian scientists to conduct a joint research program to study the utilization of engineered wood as an alternative to sawn woods for structural components of wooden houses.

Participation in research into the, “*Development of Structural LVL from Tropical Wood and Evaluation of their Performance as Structural Components of Wooden Houses*”, has involved five Japanese, six Indonesian, and three Malaysian researchers and one Japanese Cooperator/LVL producer. Since 2003, activities have comprised five Research projects conducted in Japan and two in Indonesia, producing five published papers and one in preparation.

Laminated Veneer Lumber (LVL) is gaining a reputation as a newly engineered wood product in Malaysia and Indonesia. There is already plenty of information available regarding production techniques for LVL, but research info how to utilize LVL has only just started. As a structural component, LVL must meet certain standards. LVL can be utilized as a building material for housing construction, to replace solid woods produced from natural forests.

Tests of the physical and mechanical properties of LVL have been conducted in Japan and Indonesia, and pro-

duced almost the same results. Testing of Falcata’s Laminated Veneer Board (LVB) was performed in Japan by comparing two different plywoods. The overall results showed that LVL and LVB, the basic materials of which are Rubber and Falcata wood, were suitable as structural components, provided that the design matched the material’s behavior.

Investigation of the structural system in Japan involved the Fink-type roof trusses test, which yielded good results, although steel bolts which can create slip were used as fasteners. The floor system was also tested and showed good behavior due to lateral load.

Howe type roof trusses tests with several types of connectors were conducted in Indonesia. The nailed plywood gusset connection has a small deformation, having more strength than the load design, but is brittle, whereas bamboo dwelled plywood gusset behaved well as ductile and was able to surpass the designed load limit. The two-dimension frame test showed fair ductile behavior, but revealed fairly great displacement.

The result of the structural system investigation showed that as a system, LVL and LVB are reliable as structural components and elements in the construction of wooden buildings.

Although some problems concerning the parameters needed to design a wooden building were only partially solved, the overall results could be utilized in the implementation of wooden building construction.

From all the tests which have been done, the researchers obtained good theoretical information as well as engi-



Researcher testing the structural system

neering techniques, which were directly applicable. However, investigations of the reliability of LVL have not been completed. Some testing and evaluation of the structural system are still to be conducted.

Joint research activities involving several countries has led to the exchange of ideas and experiences, and networking for manpower development. For these reasons, such activities should be not only continued but expanded on.

bourne University. At that time, I thought that Japan was the reason why my leg was gripped, but again I could not go. I had to bury my dream.

Obtaining a PhD degree has been my dream since childhood and I have never given up on it. In 1994 I took a master’s course at the Bandung Institute of Technology in the Program with a major in timber grading. I chose timber grading because Indonesia had hundreds of species of trees for building materials in the market without any parameters to predict the strength of the timber. Fortunately, I had a chance to visit Japan in 1995 and met some professors at the Wood Research Institute.

The story of how a long-held dream came true

Dr. Anita Firmanti

Research Institute for Human Settlements Technology

One day in October 1991 on the Shinkansen platform of Kyoto Station, I was looking around for the person who was to pick me and saw quite a tall Japanese gentleman who gave me a warm smile. “Are you Anita? And are you Imamura-sensei?” That was our first conversation. Prof. Imamura was the person who introduced me to the

Wood Research Institute. Attracted by the research environment in Japan, I applied for a scholarship from Mobusho with the full support of Tokyo University. Although I passed the examinations I could not go, as one of my legs was gripped. In late 1992, AUSAID announced that I was one of the candidates for a PhD degree at Mel-

I joined the LIPI-JSPS Core University Program in 1996 and have since had several chances to come to Japan for cooperative research. Prof. Ishihara first gave me the idea to conduct research on the fire resistance of wood-based materials, which I did. In the second IWSS in Serpong, Prof. Sasaki gave me the brilliant idea of conducting research related to fire resistance and mechanical properties. I finished my master's degree study while I did research in Indonesia and sometimes in Japan.

Gradually the dream that I had buried deep inside was fulfilled. For some years I had the opportunity to conduct cooperative research with Kyoto University as part of the LIPI-JSPS Core University Program. In the beginning Prof. Ishihara and then Prof. Kawai gave me the chance to carry out a long-term cooperative research program in his laboratory. He also gave me the chance to apply for the Ronpaku



Researcher testing samples in the laboratory

Scholarship. I realized that I had very limited knowledge and capabilities, but who can deny God is will? In the most difficult time of my private life, my application for the Ronpaku Scholarship was accepted. For me, Prof. Kawai had the power to make it possible.

Adjusting from a visiting researcher to a student was not easy for me and in the first year of the program I was very confused. Then, my first paper was rejected by an international journal. I was frustrated and almost gave-up, facing the fact that my private life was a



Researcher showing the certificate of degree

mess and my studying was no good either. In the second year, I was in Japan for almost two weeks when my late son was diagnosed with cancer. Prof. Kawai and Prof. Yano kindly allowed me to be with him until his death. My spirit was broken by his passing. Although I tried hard, healing took quite a long time for me. In the third year, my spirits were raised by the acceptance of my second paper. In the fourth year, I finished three papers, one of which was directly accepted. My private life was up and down, getting better with my re-marriage but getting worse with the tumor in my eye. In the fifth year, I was blessed with the acceptance of my fifth paper and finishing the dissertation.

Just like a roller coaster, during the hardest times with the full-stress of graduating or not graduating, doctors suspected I had endometrial cancer. Having lost the person closest to me to cancer, the news almost drove me crazy. Maybe affected by the news that Kyoto University gave me a PhD degree, the tumors disappeared. What a miracle, the doctor could not believe his eyes and checked me many times. I am sure that God loves me in many ways. Finally, my dream of obtaining a PhD degree has come true. I was formally graduated on March 23rd, 2005. I would like to convey my sincere gratitude to all of the professors and everyone at JSPS and LIPI who supported me, I could not

possibly mention them all here. I am afraid to be too joyful because I always remember what Kahlil Gibran said in "The Prophet": *Together joy and sorrow come, and when one sits alone with you at your board, remember that the other is asleep upon your bed.*

I wrote this story with the hope that junior students can learn something from this, at least not to give-up easily and work harder than me because they have the opportunity to make their dreams come true while they are young. The degree gave me more responsibility to share something with my country. Maybe my efforts are like dust in the wind but I will do my best. The earthquake disasters in Indonesia have made our people realize the importance of applying timber houses in the earthquake zones our ancient ancestors did. But, with the limited supply of high-quality timber recently, the results of my long-term studies need to be applied. What hard work awaits me. I am happy that in the last stages of my studying I had the opportunity to enjoy the precious Fuji-san and beautiful Sakura as symbols of Japan. I tried many Japanese foods even some I could not eat like natto and uni and wore a kimono. Japan is my second home, the place where I could make my dream come true.

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