



Opening of the RISH-RDUB Satellite Office

Dr. Junji Sugiyama
RISH, Kyoto University



Sign at the entrance of the satellite office

The JSPS-LIPI Core University Program in the Field of Wood Science started in 1996 has just finished its ninth year, leaving one year to evolve expansively. Our institute (WRI to RISH) has been serving as the core university to coordinate the activities of collaborating universities, institutes and individual researchers in Japan and to plan and actually implement the activi-

ties hand in hand with the counterpart core institute, the Research and Development Unit for Biomaterials (RDUB), Indonesian Institute of Sciences (LIPI), Indonesia. To date, more than 20 projects have been planned and executed, bringing lots of results from practical applications to fundamental aspects. The achievement is exemplified by a number of papers published in major international and domestic journals as well. Furthermore, the program contributed to train many qualified wood scientists in Indonesia, who became key players to establish the Indonesian Society of Wood Research in 1996. The previous bioma-

terial research group of the R & D Centre for Applied Physics became an independent institution, the RDUB, in 2002 after the recognition of the new circumstances.

The 25th February 2005 marked another chapter in the history of the JSPS-LIPI collaboration partnership. The opening ceremony of the satellite office was held officially with more than 50 attendees. At the ceremony, the addresses were given by Professor Bambang Subiyanto, Head of the RDUB, Professor Endang Sukara, Indonesian Coordinator, Deputy of Life Sciences LIPI, the Japanese Coordinator, Professor Yuji Imamura from our institute, and a distinguished guest, Professor Umar Anggara Jenie, the Chairman of the LIPI. The ceremony was finalized by cutting a ribbon at the entrance of the satellite office by Professor Umar Anggara Jenie and Professor Yuji Imamura.

The opening of the satellite office at



A scene after the official opening



Prof. Umar Anggara Jenie, the Chairman of LIPI



Flower decoration with messages for the opening

the LIPI could not have been achieved without the dedicated efforts of the

LIPI, providing a room of 50m² close to the room of the head of the RDUB. The

office is arranged as a base for Japanese researchers who visit Indonesia and as a place to accumulate all the intellectual materials and information brought from Japan to be shared with Indonesian scientists. In the near future, the office will be more and more useful for arranging long and/or short term stays for Japanese scientists to host international seminars or workshops in the field of wood science toward the establishment of a sustainable humanosphere.

- 5th International Wood Science Symposium (IWSS) - Sustainable Production and Effective Utilization of Tropical Forest Resources

Dr. Toshiaki Umezawa
RISH, Kyoto University

The 5th IWSS was held at Clock Tower Centennial Hall, Kyoto University, Japan, on September 17-19, 2004. The symposium was organized by the Research Institute for Sustainable Humanosphere (RISH), Kyoto University, Indonesian Institute of Sciences, and Universiti Putra Malaysia, and was the first symposium under the JSPS-LIPI Core University Program since the Wood Research Institute (WRI) was reorganized to RISH in April 2004.

The aim of the symposium was to

provide a forum for scientists from Japan and Southeast Asian countries to share up-to-date information pertaining to a wide variety of research subjects in wood science and technology in relation to the establishment of a sustainable society, and papers related to the following topics were invited: wood formation, biotechnology, wood chemistry and pulping, bark utilization, wood-based materials, biodegradation and preservation of woods, biomass utilization and biomass energy, and envi-

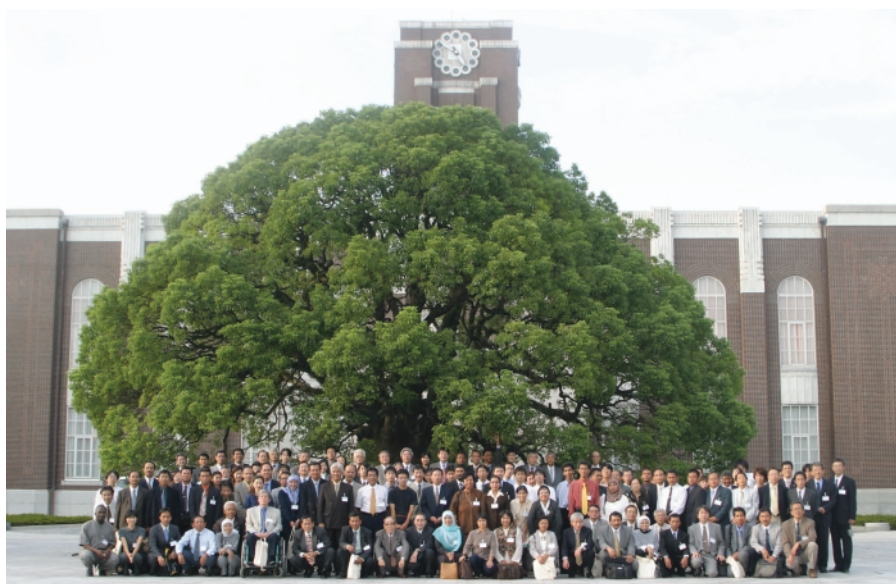


MOU signing by Prof. H. Matsumoto (RISH Director) and Dr. B. Subiyanto (RDUB Head)

ronmental issues. This symposium was attended by 160 scientists from Japanese universities including students from abroad (China, Bangladesh, Guinea, Brazil, Pakistan, and Korea) as well as 36 Indonesians, 4 Malaysians, one Philippino, and one Thai scientist.

The symposium was opened by a Welcome Address from Prof. H. Matsumoto. Then, Opening Remarks were delivered by Prof. Y. Imamura (RISH) and by Dr. E. Sukara (LIPI), respectively. In the opening ceremony, the memorandum of understanding which was originally signed between the WRI, Kyoto University and the R & D Center for Applied Physics, LIPI was extended with a revision due to reorganization of both institutions. Prof. H. Matsumoto [the director of the RISH, Kyoto University] and Dr. B. Subiyanto [the director of R & D Unit for Biomaterials (RDUB), LIPI] signed the revised MOU.

The total number of papers presented was 115, which consisted of four keynote lectures, one invited lecture, one special lecture, 63 oral papers, and 46 poster papers. The keynote lectures were given by representatives from



All the symposium participants

Japan (Dr. T. Umezawa, RISH), Indonesia (Dr. B. Subiyanto, RDUB), Malaysia (Dr. E.D. Wong, Universiti Putra Malaysia), and the Philippines (Dr. D.A. Eusebio, Forest Products Research and Development Institute), overviewing the current status and future prospects of sustainable production and effective utilization of tropical forest resources in each country. Mr. H. Endo (Head of the Asian Program Division, JSPS) gave the invited lecture on the JSPS program with Asian countries, which was comprehensive and very informative. The special lecture was given by Prof. T. Tsuda (RISH). He gave an overview on collaborative observations of equatorial atmosphere dynamics over Indonesia and pointed out the importance of interdisciplinary research on tropical forests. Poster presentations were delivered for the first time in the successive IWSSs. Each

poster presenter was given 5 minutes to outline the presentation orally. This was well received by young Japanese students, especially those who made an oral presentation in English for the first time.

In the closing ceremony, Prof. S. Kawai (RISH) overviewed the symposium, and Dr. E. Sukara (LIPI) outlined the next, the 6th IWSS, to be held on Bali island in 2005.

Following the presentations, a scientific excursion to Himeji Castle was held and the participants inspected and enjoyed the wooden structures of the beautiful Japanese castle.

Lastly, on behalf of the organizing committee, I would like to thank all presenters and participants for their excellent presentations and active discussions; we firmly believe that the 5th IWSS will promote the establishment of science and technology in the field



Mr. H. Endo (JSPS) giving the lecture



Lecture hall scene

of sustainable production and effective utilization of tropical forest resources.

Impression of the 5th IWSS 2004 in Kyoto

Dr. Wahyu Dwianto

R & D Unit for Biomaterials-LIPI, Indonesia

It was a great pleasure for me when Prof. Y. Imamura asked me to write my impressions of the 5th IWSS because I participated in almost all of the symposia and obtained a lot of valuable achievements for my scientific career. The First International Wood Science Seminar was held in 1996 at the Wood Research Institute (WRI) Hall, Kyoto University Uji Campus. The JSPS-LIPI Core University Program in the field of Wood Science was also started in the

same year. It was my first experience as a Masters student of Kyoto University to present a full paper at an international seminar. Since then, five IWSS have been organized over 9 years in 1996 (Japan), 1998 (Indonesia), 2000 (Japan), 2002 (Indonesia), and 2004 (Japan).

The 5th IWSS was successfully organized by the RISH September 17-19, 2004. As well as the spirit of Core University Program, *i.e.* Sustainable Production and Effective Utilization of Tropical Forest Resources, the aim of the symposium was to discuss on the research activities and the results obtained by collaborative research and to find new research subjects for the effective utilization of wood and natural resources in harmony with the global environment. Furthermore, it was hoped that the symposium could contribute to the future development of wood science and technology of Japan, Indonesia and other Asian countries.

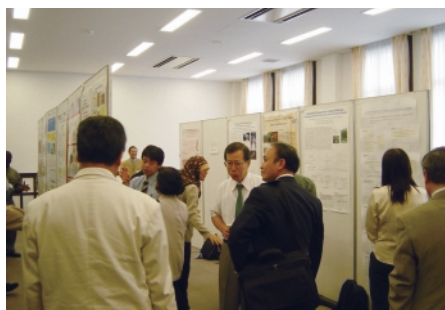
The special lecture by Prof. T. Tsuda and some papers from previous RASC scientists have enlarged the scope of sustainable humanosphere research. He presented a very interesting lecture entitled: An Overview on Collaboration and Observation of Equatorial Atmosphere Dynamics over Indonesia. Other interesting papers from RASC scientists were Preliminary Analysis of the Growth-rings of Tropical Trees and a Preliminary Study on Wood Deterioration in a Simulated Space Environment.

I myself have a lasting impression of when Prof. Y. Imamura asked me to have lunch with himself and other professors, such as Prof. T. Higuchi (emeritus), Prof. H. Sasaki (emeritus), Prof. M. Shimada, Prof. S. Kawai, and other distinguish guests at the Centennial Hall La Tour Restaurant. Another two unforgettable moments at the 5th IWSS were the chairperson's important speeches at the keynote session on the second day. The first speech was delivered by Dr. T. Umezawa from RISH, and the second by Dr. B. Subiyanto from the R & D Unit for Biomaterials, LIPI.

The next IWSS will be held in Bali,



Prof. Kawai, Prof. Hamami, Prof. Sasaki, Dr. Sukara, Dr. Eusebio, Dr. Wong, Dr. Subiyanto, Prof. Higuchi, Prof. Shimada and Dr. Dwianto (L to R)



Besides 70 oral presentations, 46 posters were presented

The 5th IWSS and Research Prospects in the Philippines

Dr. Dwight A. Eusebio
FPRDI-DOST, The Philippines

The 5th IWSS was designed to provide a forum for scientists from Japan and Southeast Asian Countries to share up-to-date information pertaining to a wide variety of research subjects in wood science and technology relative to the establishment of a sustainable society, which was indeed very timely. Presentation of various subjects such as wood materials, wood bioscience and wood biomass thoroughly discussed and opened more avenues for new and wider opportunities for research. The society really needs new materials, new products and revolutionary technologies that will address not only the present generation, but also future generations.

“Sustainability” is the keyword nowadays according to Prof. H. Matsumoto, the Director of the RISH, during his welcome address. Indeed, sustainability in the context of wood science and technology should be given more emphasis in order to address



Dr. Laemsak, Prof. Kawai, Dr. Eusebio, Prof. Imamura and Mr. Endo (L to R)

problems of population growth, environment, energy, food, and shelter, as well as resource shortages.

The 5th IWSS as a forum for enhancing the knowledge of participants in their field of specialization likewise served as a platform for understanding the role and contribution of the Japan Society for the Promotion of Science (JSPS) in promoting international scientific cooperation, supporting young researchers and funding scientific research activities. Mr. H. Endo, Head of the Asian Program Division, JSPS, pointed out the necessity of partnership with ASEAN member countries. Establishing closer links among Asian countries considering their rapid development and problems common to the region, particularly on environment and sustainable development, were given emphasis.

In the Philippines, sustainable development has been an issue for many years. However, the balance between forest production and effective utilization of forest resources has hardly be achieved. This is due to many factors such as poverty, rapid population growth, in effective programs to address reforestation and plantation development, lack of technologies to effectively utilize wood and non-wood forest resources and many other issues.

Although Philippine forestry is con-

Indonesia, at the end of August 2005. It will be the last IWSS under the JSPS-LIPI Core University Program because the program will finish in March, 2006. As the Organizing Committee, I hope the R & D Unit for Biomaterials (LIPI) can prepare everything as well as RISH has done. I am looking forward to seeing you all in Bali.

sidered to be in its worst condition ever, forestry experts are very optimistic that sustainable forestry is still attainable if people act together



as soon as possible. Other requirements of sustainable forestry include the proper management of productive forests, including environmentally friendly and efficient forest harvesting (Dizon, J.T., et al. Poverty Eradication Through Sustainable Forest Management. The Philippine Lumberman. Jan-Mar 2002).

The Philippines' National Science and Technology Plan (NSTP 2002-2020) aims to help promote sustainable forestry by employing modern production technologies and a management approach. These include the use of biotechnology, plantation development, and the improved production and utilization of non-timber resources like bamboo and rattan (DOST, 2002).

FPRDI is the research arm of DOST that generates, improves and transfers appropriate technologies and information on the efficient use of forest-based products. FPRDI's vision is a sustainable forest-based industry that produces economically competitive and environment-friendly commodities that contribute to socio-economic development and support the disadvantaged sectors of society. To efficiently utilize forest resources, FPRDI focuses on six R & D programs; Material Science, Housing Technologies, Furniture and Handicraft, Chemical Products and Biomass Energy, Handmade Paper and Technol-

(continues to the middle section of p.5)

Attending the 5th IWSS as a supporting staff member

Mr. Naoki Sakamoto
Admin. Bureau, Kyoto University



*Dr. Firmanti, Mr. Sakamoto and
Dr. Subiyanto (L to R)*

In September 2004, I participated in the 5th IWSS as one of the administrative staff. It was my great pleasure to have the opportunity for the personal interchange with the many foreign participants supporting the symposium.

I was also very impressed with the banquet and excursion. At the banquet, the Indonesian participants introduced their traditional performance and

dance, while the Japanese gave a demonstration of the tea ceremony. I think that such traditional and cultural performances contribute much to promote better mutual understanding. The excursion was to a world heritage site, Himeji castle, and was the last event of the symposium. All the participants relaxed after the conference, so that I could make good friend among the par-

ticipants, and had a very good time.

I hope that the relationship established at the symposium between Japanese, Indonesian and Malaysian people will deepen in the future!

Terima Kashi!



Tea ceremony at the banquet



Excursion tour to Himeji Castle

(from p.4)

ogy Transfer.

Sustainable production, forest protection and effective utilization of forest resources from the basis for FPRDI's project implementation. FPRDI considers not only the plantation forestry program targets (both wood and non-wood) resources, but also the trends in the export & import of both raw materials and forest products. The Institute implements more than 100 projects every year addressing the different program objectives. In consideration of

environmental issues, the programs properly and promptly address issues on depletion of resources, disposal of hazardous and toxic wastes and pollution of water and air. The Department of the Environment and Natural Resources (DENR), other government institutions and private entities also conduct R & D studies to address issues on sustainable production and utilization of natural resources.

In line with the government's program on sustainable production of for-

est resources, massive development of wood, bamboo and rattan plantations should continue in accordance with the various government programs. The effective utilization of these resources through the proper implementation of the projects and programs envisions a sustainable forest-based industry, able to produce competitive and environment-friendly commodities that contribute to socio-economic development and support the disadvantaged sectors of society.



It is with great sadness that I have to inform all readers of Prof. Takashi Okuyama's demise on the 20th November, 2004 in a traffic accident. He had

contributed a great deal to the development of wood science both domestically and internationally as Professor of Biomaterial Physics, Graduate School of Bioagricultural Sciences, Nagoya University and the vice president of the Japan Society of Wood Science. He also played a big part in the JSPS-LIPI Core University Program in the field

of Wood Science, especially as a project leader for the cooperative research projects; "Growth Mechanism of Fast-growing Species in Tropical Forest" and "Studies on the Effect of Silvicultural Conditions to the Wood". Here, we would like to offer our condolences on his sudden and untimely passing. (Y. H.)

Characterization and Development of Novel Utilization of the Unused and Unvalued Wood Species Grown in Indonesia

Mr. Sudijono

R & D Unit for Biomaterials, LIPI, Indonesia



Compressing of wood samples for penetrability and recovery test

Recently, the demand of wood as a raw material is still dominated by commercial wood species (major and minor commercial timber). On the other hand, the production of commercial wood tend has decreased, due to cutting, illegal logging, forest fires, and a lower rate of reforestation. Therefore, alternative wood material resources are needed to substitute commercial wood, for example by using lesser-known wood species.

Motivated by responsibility as scientists in the wood science field, the R & D Unit for Biomaterials, LIPI has a good relationship with Japanese scientists, and with our former teacher, created an idea to explore lesser-known wood species.

Following long discussions and in a spirit of research cooperation conducted by the JSPS Core University Program, the research No.22 was carried out with theme "The Characterization of Main Wood Species and Development of Novel Utilization of Unused and Unvalued Wood Species Grown in Indonesia". The research was conducted at the laboratory of the Biomaterial

Science and Wood Base Composite, Graduate School of Agriculture, Kyoto Prefectural University, Japan. The Indonesian members of this program are Drs. S. Yusuf, W. Dwianto and me and the Japanese members are Drs. I. Iida, and Y. Furuta, and Profs. Y. Ishimaru and K. Minato.

The research activities in Indonesia include collecting wood samples and information concerning the conventional and traditional utilization of those woods and analysing wood properties.

As for research activities at the Graduate School of Agriculture, Kyoto Prefectural University, Japan, in the first year from Sep. 15th to Oct. 15th 2002, we focused on observations of specific gravity and the bending strength value (MOE, MOR) of every wood species. There were 15 species of Indonesian wood which we observed. By comparing three conditions: dry (20°C), wet (20°C), and wet (80°C) for each value of MOE and MOR. The results of the experiment, showed a change in the bending strength value due to changes in moisture content and temperature, and a correlation with specific gravity. The results were published in the Journal of Wood Science, Vol. 50, (2004) p.371-374, entitled: Characterization of Major, Unused and Unvalued Indonesian Wood Species I. Dependencies of mechanical properties in the transverse direction on the changes in moisture

content and/or temperature.

As for the second year, from Aug. 16th to Sep. 30th 2003, the research focused on visco-elastic properties, wood chemical properties and vibration properties. Visco-elasticity was determined by stress relaxation measurements with changing of moisture contents and temperature, and strength modulus relaxation was observed as a value relative to specific gravity. The observation of wood chemical properties was done to clarify the wood chemical content and extractive substances. Determining the mechanical properties by vibrations was aimed at getting information on acoustic properties. The results were presented as a poster session at the 5th IWSS 2004 at Kyoto University, Japan entitled (1): Stress relaxation behavior of Indonesian wood species to moisture content and/or temperature changes and (2): Evaluation of Indonesian wood species in terms of their physical, mechanical and chemical properties.

In the third year, from Sep. 6th to Oct. 20th 2004, the research focused on the penetrability, recovery and anatomical observation of 21 Indonesia wood species. Determining the physical properties and characteristic anatomical observation can be useful to promote environmental responsibility.

The results from the three years (period 2002-2004) of research will be analyzed and discussed further, and we hope to make conclusions regarding the characteristic of 15 to 21 species of Indonesian wood. The results will be used as a basis to identify the appropriate utilization of those woods based on their characteristics.



Dr. I. Iida, Prof. Y. Ishimaru, Dr. W. Dwianto, Prof. K. Minato and the author (The third from right side in the second row) surrounded by students in lab. of Bio-material Science and Wood Base Composite on Graduate school of Agriculture, Kyoto Prefectural University, Japan

= Collaborative Research Facility =

Equatorial Atmosphere Radar (EAR) and research activities in Indonesia

Dr. Mamoru Yamamoto
RISH, Kyoto University

The western Pacific region known as the Indonesian Archipelago is the center of intense atmospheric motion and global atmospheric changes. The mechanisms of these atmospheric changes and fluctuations, however, have not yet been clarified due to the lack of observational data in that region. Recent uncontrolled fires in Indonesia demonstrated that the local impact on the atmosphere is not limited to the Indonesian area, but easily expands to its neighboring countries. It is now strongly urged that we expand studies of the equatorial atmosphere on a large scale. The mechanisms that cause atmospheric changes are considered to have a hierarchical structure or multiple structures, which requires observing the atmosphere with different horizontal scales. As a key facility for these studies, the Equatorial Atmosphere Radar (EAR) was built right on the equator in 2001.

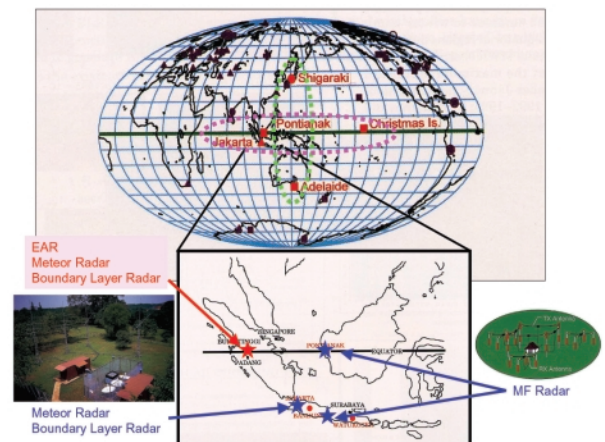
The EAR is a large Doppler radar facility located at the equator in Western Sumatra, Republic of Indonesia. It consists of 560 Yagi antennas in a circular field of 110 m in diameter. Its central frequency and output power are 47 MHz and 100 kW (PEP: Peak-Envelope Power), respectively. The EAR can observe atmospheric winds and turbulence in an altitude range from 1.5 km to 20 km. Ionospheric irregularities in the F-region (250-600 km altitude)

and E-region (90-120 km altitude) are other targets of the radar. The EAR has almost the same functionality as the MU radar, but has only 10% of its output power (and the sensitivity).

The EAR is operated under close collaboration with the National Institute for Aeronautics and Space (LAPAN) of Indonesia. A Grant-in-Aid for Scientific Research for Priority Areas "Coupling Processes in the Equatorial Atmosphere (CPEA)" is currently being conducted from 2001-2006, which is led by Prof. S. Fukao, RISH, Kyoto Univ. As the main part of the project, the EAR has continued long-term observations of the troposphere and the lower stratosphere since June 2001. The CPEA is a collaborative program of researchers from Kyoto University, Shimane University, Tokyo Metropolitan University, Nagoya University, and others. During the course of the CPEA project, various instruments, for example, a meteor radar, a boundary layer radar, and an X-band meteorological radar, have been accumulated at the EAR site.

We, the atmosphere-study group in

RISH, have continued scientific collaborations with Indonesia since the mid 1980s. We then started a number of observation campaigns of balloon measurements with Indonesian scientists in 1991. In 1992, continuous operation of two radars, a boundary layer radar and a meteor radar started near Jakarta in collaboration with LAPAN and BPPT (Agency for Assessment & Application of Technology). Now, we have several permanent sites in Indonesia in addition to the EAR. They are two MF (medium frequency) radars in Pontianak (West Kalimantan) and in Pameungpeuk (South Jawa), one boundary layer radar in Serpong (Jakarta suburbs), and one airglow imager located in Bandung.



Indonesian regional network for atmospheric study

RISH now plans to improve the science of the humanosphere in Indonesia. Central to the project is the large artificial forest of *Acacia mangium* near Palenbang. The research aims to clarify the environment around the woods and to reveal the impact of utilizing wood resources on the environment by combining atmospheric and wood sciences. The EAR will be open to Japanese and Indonesian scientists as a collaborative facility and, as well as other observatories for atmospheric science, will provide useful data for the project. We also hope that our experience of continuous observations and long-term collaborations with people in Indonesia will contribute to the future development of our science.

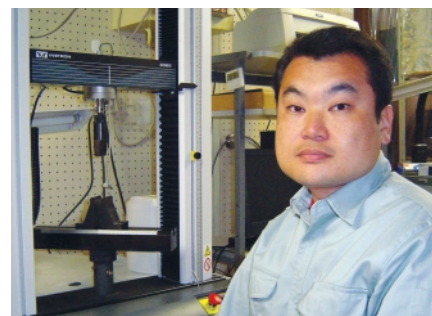


EAR antenna field (110 m diameter, 560 Yagi antennas, 100 kW peak output power)

= Student from Brazil =

My life as a PhD student in Japan

Mr. Antonio Norio Nakagaito
RISH, Kyoto University



I came to Japan for the first time in 1999 as a trainee sponsored by JICA and was quite fortunate to get to know the former Wood Research Institute and its members. Until up then, I had been working with organic crystals with applications to photonics devices used in telecommunications. Therefore, coming to this institute meant changing drastically the subject of research, but also I had the opportunity to be introduced to the field of bio-composites, just another branch of the same Materials Science. At that time, under guidance of Prof. Yuji Imamura and Prof. Hiroyuki Yano, we made some incursions in producing high-strength composites based on kenaf and cotton fibers impregnated with phenolic resin, and for me it was a very pleasant start. After one year of training, I went back to Brazil quite excited to return for a doctorate course. So I did I have got a scholarship from the Monbukagakusho and came again to the same laboratory, this time under supervision of Prof. Shuichi Kawai and Prof. Hiroyuki Yano. As a PhD student now, my work is to establish a production method to

obtain high-strength composites based on microfibrillated cellulose. Microfibrillated cellulose or MFC is the same cellulose used to produce paper, but with a different morphology. The original structure of pulp fibers is destroyed through a process called microfibrillation, giving place to a new structure composed of tiny interconnected microfibrils, forming a weblike network, which allows an expanded reactive area to the elements, improving the interactive forces and consequently delivering enhanced strength to the final composites. Using this cellulose morphology impregnated with phenolic resin, we obtained composites with mechanical properties similar to those of commercial magnesium alloy.

Producing materials from bio-resources is a means to accomplish the so debated carbon fixation. This has been a major concern in recent years since the use of fossil fuels as source of energy during the last century released enormous amount of carbon dioxide, causing serious problems to the global climate due to the greenhouse effect. For countries like Brazil, making use of the huge vegetable resources is of enormous significance, whether from the ecological point of view or from the economical one as well. Adding value to products made not only from wood resources but also from fibers of plant origin or even waste byproducts like sugar-cane baggasse, has a significant economical importance. In this sense, I hope that my studies here would be beneficial to the world's environment as well as for my country's.

Since I started practicing aikido, a martial art that in essence means literally synchronizing one's "ki" with the opponent's "ki", I have seen things from a new perspective. The ultimate goal of aikido is to get along with your

opponent. Although it sounds paradoxical, it is the essence of the philosophy. "ki", a word usually translated simply as energy, has a much broader meaning. I was told that in ancient times, "ki" was used to describe anything you cannot see but can feel. So, electricity is called "denki", we refer to some place's atmosphere as "fun-iki", the climate is "tenki", and so on. In aikido as a martial art, you feel the opponent's ki and just adjust yours to accomplish the perfection of your movements. In this sense, being environmentally friendly is like synchronizing human being's ki with nature's. In essence, we are playing aikido with the universe, and I believe this is the only way to achieve the equilibrium. This is the way I see my research work and wish that it would somehow contribute to a more livable world.



At the contest of "Aiki-do"

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