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Academic Field of Materials and Life Science

The Creation of an Advanced Center for Sustainable and Environmentally Friendly Technologies

IKURA, Koji

Head of the Academic Field of Materials and Life Science
 Professor of Applied Biology, Graduate School of Science and Technology

The Academic Field of Materials and Life Science involves education and research related to both life and materials sciences. Some feel that these two fields are quite different but actually they are not. The earth is an aggregation of a wide variety of substances composed of molecules. The first form of life on earth, an archaeocyte, came into existence about 3.8 billion years ago through chemical evolution. From this simple organism all forms of life that we know today developed through a lengthy and exceedingly slow process. Since the functions of life are so amazing and yet mysterious, we often forget that life forms are an aggregation of molecules. Therefore, we can say that life science is really a materials science that focuses on "materials" related to the highly sophisticated functions of "life forms".

Molecular research on the operative mechanisms of genetic information and the control and defense mechanisms occurring in the nervous, the endocrine and the immune systems of living bodies has rapidly advanced. In this field, the methodologies of chemistry and physics, the foundations of material science, play a very important role. In addition, it is believed that the structural information of molecular groups related to cell construction will contribute significantly to the further development of nanotechnology, the cutting-edge area of applied materials science. In the near future, as researchers develop innovations related to materials, both organic and inorganic, the fusion of life science and materials science will be an important trend. This fusion will play a key role in the development of new technologies for sustainable living in the 21st century. For example, a pressing current global environmental issue is the need for non-petroleum-based technologies. Presently, researchers are trying to create plant biomass-based production systems (Bio-refineries) to replace the petroleum-based production systems. The fusion of life science and materials science will undoubtedly lead to breakthroughs in this area.

KIT was among the first institutions in Japan to merge branches of the sciences. The reorganization of the Academic Field of Materials and Life Science occurred in 2006 and this field has four areas: Applied Biology, Biomolecular Engineering, Macromolecular Science and Engineering, and Chemistry and Materials Technology. Applied Biology is focused on research on biomolecules, cells and all kinds of living bodies (including microbes, insects, plants and animals) to elucidate the mechanism of biological functions and promote the development of new useful substances and environmentally friendly solutions. In Biomolecular Engineering, researchers are using chemistry to study the structures and functions of biomolecules in order to create artificial molecules that could be used to duplicate biological processes or functions. In Macromolecular Science and Engineering, researchers are analyzing the structure, function and nature of macromolecular materials to design macromolecular materials with new functions or to develop biodegradable plastics. In Chemistry and Materials Technology, researchers are working on principles related to the structure, function and conversion of materials as well as the development of new functional materials.

Currently, there are 26 international students and two exchange students in the undergraduate and graduate schools of the Academic Field of Materials and Life Science, and each is highly motivated. Kyoto, where our university is located, is an ancient capital with over 1,100 years of history. Kyoto was the birthplace of many traditional customs and crafts. I hope students and researchers from all over the world will enjoy learning about Japanese culture in Kyoto. It is my dream to make the Academic Field of Materials and Life Science an advanced center for the development and creation of new technologies that are sustainable, environmentally friendly and highly beneficial.

	School of Science and Technology	Graduate School of Science and Technology	
	Undergraduate Program	Master's Program	Doctoral Program
Academic Field of Materials and Life Science	Applied Biology	Applied Biology	
	Biomolecular Engineering	Biomolecular Engineering	
	Macromolecular Science and Engineering	Macromolecular Science and Engineering	Materials and Life Science
	Chemistry and Materials Technology	Chemistry and Materials Technology	

The Museum and Archives is an in-house educational research center which opened in October 1981. I became the Director in April this year. Currently our collection consists of more than 37,000 items including a full range of European posters from the late 19th century and early 20th century. One of the most outstanding posters we have in the collection is "Reine de Joie" by Lautrec. Some fine posters from our collection are on display in the main exhibition hall on the first floor.

Most of our collections, including the posters, were collected as educational materials by the Kyoto College of Technology, the original college around which this university is built. The college was established in 1902. This was the golden period of the European art nouveau movement. Since the Kyoto College of Technology started Japan's first Department of Design, the college actively collected European arts and crafts for educational purposes. Today, many universities in Japan have in-house museums, however, our

Museum and Archives is the only one with such a wide range of European arts and crafts from the late 19th century and early 20th century. Chu ASAI, the first professor of the Department of Design, who brought "Reine de Joie" from Paris, and Seiki KURODA were among Japan's first specialists in western painting. There is a permanent exhibition hall in the museum where people can view ASAI's work.

The collection also includes a number of Japanese antiques from the Edo period. It seems art educators in those days had a strong interest not only in European arts but also traditional Japanese arts. In August of this year, the museum opened "Museum Collection I" focusing on samurai clothing, Japanese armor and sword guards. Another special exhibition, "Museum Collection II", will open around January 26th, 2009 (Cultural Property Fire Prevention Day). In that exhibition, 12 life-size collotype photographs of the Kon-do Hall of Horyu-ji Temple in Nara will be displayed. These photos were taken before the original Kon-do Hall burned

Museum and Archives Promotes Collection

NAMIKI, Seishi

Director of the Museum and Archives
Professor of Architecture and Design, Graduate School of Science and Technology



ASAI, Chu "Warrior Hunting Scene" (AN. 3279)

down in the middle of the 20th century. As only 20 sets were printed, these photos are extremely valuable. I was exceedingly impressed when I saw them. I look forward to discovering other buried treasures and making them available to the public.

In addition, the museum is used for a wide range of educational activities. For example, students can work with the exhibition staff to learn how to organize exhibitions. We also accept domestic and international researchers for collaborative research projects. We actively lend our museum collections to other museums too.

I would like to make the Museum and Archives an open museum where everyone feels welcome. With the cooperation of our entire staff, we will have more, interesting special exhibitions and will increasingly promote our great art collection throughout Japan and the world. We would like to collaborate more and more with domestic and foreign museums to create exhibits from our superb collection.



TSUBA Sword Guards
(top left: AN1768-2,
top rt: AN1768-1,
bottom left: AN1765,
bottom rt: AN1766)

Current Cooperative Activities in Science and Technology Between KIT and the Arab Republic of Egypt's Universities and Research Institutes

Walid Mahmoud Abdelnasser
Ambassador of the Arab Republic of Egypt to Japan



H.E. Dr. Walid Mahmoud Abdelnasser

Ambassador of the Arab Republic of Egypt to Japan (as of September 2007)



As a career diplomat since 1984, H. E. Dr. Abdelnasser served as Chief of Cabinet of the Egyptian Minister of Foreign Affairs (2001-2002), Deputy Chief of Mission at the Egyptian Embassy in Washington DC (2002-2006) and thereafter as Director of the Institute for Diplomatic Studies at the Egyptian Ministry of Foreign Affairs in Cairo (2006-2007). He was seconded to the United Nations from 1992 to 1999 as Special Assistant

to the Executive Secretary of the United Nations Compensation Commission dealing with the 1990/91 Gulf War reparations.

He received his B.A. and M.A. in Political Science from the American University in Cairo, later receiving his Ph.D. in Political Science from Geneva University (IUHE), Switzerland. He also holds a "license en droit" from Cairo University.

He taught Political Science at the American University in Cairo and lectured in many universities and conferences in Egypt, Switzerland, United Kingdom, France, Japan, Bahrain, Cyprus, Malta, Turkey, Romania and the United States.



The meeting of H. E. Dr. Hany Helal, Egyptian Minister of Higher Education and State for Scientific Research and KIT President Ejima



Asia and Africa Science Platform Program Seminar in Egypt

It is indeed a pleasure for me to address the Japanese scientific society through the distinguished Kyoto Institute of Technology (KIT) International Journal, a definitive source of information on all facets of KIT's many international projects, networks and accomplishments. In this connection, I would like to extend my deep appreciation and gratitude to KIT for granting me this opportunity to shed the light on some of the most recent scientific and technological developments in the Egyptian Japanese relations in general, as well as between KIT and its Egyptian counterparts in particular.

This year is very special in Egypt's relations with KIT as it coincides with our celebration of 50 years of the arrival in Japan of the first Egyptian scholar to benefit from a Japanese Government scholarship to study at KIT. Ever since then, our relations with KIT have continuously prospered. The visit of H.E. Dr. Hany Helal Minister of Higher Education and State for Scientific Research to KIT in 2006 and his meeting with KIT senior officials in 2007 paved the ground for further interaction and cooperation in the future.

One of our most recent success stories of cooperation with KIT has been the "Asia and Africa Science Platform Program", endorsed by the Japan Society for the Promotion of Science (JSPS). Under the umbrella of this program, a successful workshop on the "Creation of Environmentally Benign, Functional Fiber with High Value by Learning Nature-Made Materials" was held in Egypt from January 21st-25th, 2008. Seven distinguished Universities and Institutes from Egypt, South Korea, China, Vietnam and Japan actively participated, so as to expand our relations with KIT to regional and international dimensions based on shared goals and interests.

Our efforts to enhance scientific and technological ties with Japan go in parallel with the Egyptian Government's policy which places Science and Technology on the top of its modernization agenda. This commitment was reflected in the Egyptian President's decision to establish the Supreme Council of Science and Technology earlier this year which has on its board top Egyptian scientists and an Egyptian Nobel laureate. Another aspect of the Egyptian commitment to science and

technology is the declaration of the period from 2007-2017 as the decade of Science and Technology which began in 2007 with Germany, and will continue with Italy in 2009.

In the framework of this decade, the Governments of Egypt and Japan agreed to launch the "Egypt-Japan Science and Technology Year 2008". Throughout this year, a variety of scientific activities, including major Egyptian events in Japan, and major Japanese events in Egypt, were and will be organized. These activities include joint research, exchange of professors and students as well as other activities aimed at fostering relations between Japanese and Egyptian universities and institutions. The above-mentioned workshop on Neo-Fiber technology held in collaboration with KIT represents one of the major activities of the Egypt-Japan Scientific and Technological Year.

Our vision is to use the opportunity of the "Japan-Egypt Science & Technology Year 2008" to enhance networking between Japanese and Egyptian universities, institutions and scholars and to work together to establish sustainable and sustained institutional framework of scientific and technological cooperation which will pool all scientific activities between the two countries under its umbrella.

We are also currently finalizing discussions with the Japanese Government to reach formal agreement concerning the establishment of the Egyptian Japanese University for Science and Technology (E-JUST). This University is intended to be a "Center of Excellence" and a tool to transfer Japanese knowledge and technology not only to Egypt but also, through it, to the Arab World and Africa. The study at this University will take place according to Japanese curricula taking into consideration the needs of the industrial community in Egypt so as to make our industry and products more competitive, which will support the Egyptian development strategies. The E-JUST will further enhance the interlinkage among academia, research institutes and business circles as it will be located in the city of Borg Elarab, west of Alexandria, adjacent to Borg Elarab

Industrial Zone and Mubarak City for Scientific Research. We welcome the enthusiasm revealed by KIT to assist in this project as we are sure that its valuable contribution will enrich the work and activities of this University.

Moreover, Egypt organized in June 2008 the First Egypt-Japan Symposium on Science and Technology at Waseda University. More than 400 Egyptian PhD and Post-Doctorate researchers in Japan participated in this Conference with their Japanese professors. Our aim is to use these promising Egyptian researchers as a link between their original universities and institutions in Egypt and their universities in Japan to keep the momentum of scientific cooperation.

Finally, and despite the high degree of maturity of the Egyptian Japanese relations, especially in the field of science and technology, I am confident that with the cooperation and support of KIT, we will be able to explore further areas of cooperation and build a solid institutional partnership.

His Excellency Dr. Walid Mahmoud Abdelnasser, the Arab Republic of Egypt's Ambassador Extraordinary and Plenipotentiary to Japan, kindly contributed to the KIT INTERNATIONAL JOURNAL. This feature was made possible by KIT alumnus Dr. Ahmed EL-Salmawy who is currently cultural attaché at the Embassy of the Arab Republic of Egypt in Japan, in addition to serving as an Associate Professor at Helwan University. Dr. EL-Salmawy is also a Coordinator for Helwan University with which KIT has concluded a General Agreement for Academic Cooperation this year. In October 2007, with the cooperation of the Embassy of the Arab Republic of Egypt, an "Egypt Day" was held at KIT. It is a great honor to have previous KIT international students bridging their countries with KIT and Japan. We wish to express our gratitude to both His Excellency Dr. Walid Mahmoud Abdelnasser and Dr. Ahmed EL-Salmawy for their cooperation.



"Egypt Day" at KIT



Dr. Ahmed EL-Salmawy



Dr. EL-Salmawy spent more than 6 years gaining extensive experience in the field of Textiles and Apparel in Misr Amria Co., Alex, Egypt. From 1993 to 2000 he studied and obtained Master's and Doctoral degrees from Kyoto Institute of Technology in Polymer Science. He was appointed as a Kyoto

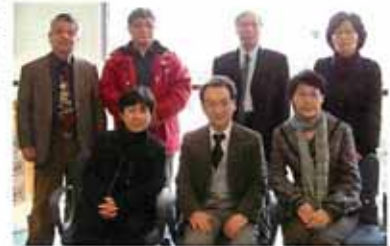
Prefecture friendship ambassador in 1998. From 2000 to 2001 he served as a Research Associate in the Department of Reparative Materials, Institute for Frontier Medical Sciences, Kyoto University. From 2002 to 2005, he joined Helwan University as a Lecturer. He is Associate Professor in Helwan University now. He was appointed as Cultural Attaché, Egyptian Embassy, Tokyo, Japan from 2005 to the present. He is responsible for more than 400 Egyptian Ph.D. candidates in Japan who, it is anticipated, will serve to enhance the mutual cultural and academic relations between Egypt and Japan.

From Asian Tradition to Design for the 21st Century

— International Architecture and Design Alumni/Alumnae Network —

A special sub-program of the MEXT Support Program for Distinctive University Education, the Promotion of New Sensibilities in Engineering, created "Workshop to Establish Networks for Asian Architecture and Design." The workshop was held at KIT from March 3rd to 5th for former KIT international students of architecture and design. Former KIT students who now work in key positions in universities or companies in their respective countries came to KIT for the workshop from Indonesia, China, Korea, Taiwan and Thailand. During this 3-day workshop, we examined KIT's reputation in Asia, and took advantage of the opportunity for dialogue among alumni/alumnae and KIT faculty and staff. Through examining the unique "Art and Technology" course required of all KIT undergraduates, participants discussed ways to further promote

global perspectives and new, future visions for art education at KIT. We feel the workshop has successfully initiated an international student design network and will help secure a strong Asian presence for KIT's programs in Art, Architecture and Design.



Remote Educational Communication Improved with Foreign Partner Institutions

Trial runs of a new television-telephone system took place between KIT and Yeungnam University in Korea in March, and Chulalongkorn University in Thailand in June of 2008. This system has made remote educational communication with academic institutions overseas a reality. Ultimately KIT hopes to employ this networking system with overseas partner institutions facilitating improved communication with both prospective students and KIT students abroad.



Letters from our Readers

I always enjoy reading KIT INTERNATIONAL JOURNAL. Since I have already graduated, it is interesting to learn about new things happening at KIT and to understand what professors think about the international students.

For example, Professor Wakasugi taught me network engineering and other subjects while I was studying at KIT. I had a good relationship with him but I didn't have a chance to learn about his ideas which were introduced in the 7th issue. After reading his thinking about international students, I now understand his heartwarming philosophy. He was always smiling at us.

Mr. Yoshii helped me a lot when I was studying at the university. Whenever I visited his office, he welcomed me with a smile and tried to speak in Chinese. It was really a relief for me to meet him when I had just arrived in Japan. I knew he made great efforts to make the situation

better for international students, but after reading his thinking in the journal, I understood his work more and admired him even more.

To read about meetings held by students is also good for me as a way of catching up on what they are doing now. Mr. Zhang who appeared in the 7th issue was in his second year at the university when I was there. I remember we talked a lot in the international student lounge and at the university festival. When I read his words, I could see he had broadened his perspectives and grown in more than years during his time at KIT.

This is what I feel about KIT INTERNATIONAL JOURNAL. In the future, I hope the journal will be even more interesting and useful for international students.

Fu Gui ('04)

Thanks a lot for mailing me the KIT International Journals! I am very glad receiving information from KIT on research there and exchange with friends of KIT openly on all aspects.

KIT International Planning Division is just like a bridge that breaks through the time and space between KIT and international students, by the help of all the Senseis of IPD, I feel that KIT is always with me and I never leave KIT too far away. I feel honoured with all the achievement KIT reached and I would like to share my minor improvement with KIT and friends.

Zhang Zhi Wei ('05)



We welcome your feedback.

Thank you for reading KIT International Journal. We welcome your comments, questions and suggestions. A small token of our appreciation will be sent to persons whose comments are selected for publication. Please email us at:

ab7128@jim.kit.ac.jp

Join the KIT International Academic Exchange Club!

This club is a global network for international academic exchange. Its members include current and alumni/alumnae international students, researchers, and members of partner institutions involved in academic exchange with KIT. The club was founded to enable KIT to contribute to academic development and promote science and technology internationally. For detailed membership information, please visit the KIT website:

http://www.kit.ac.jp/english/01_01_080000.html

International Affairs / Student Exchange Advisor

We handle the administrative tasks of the International Exchange Center. Please feel free to contact us.



A Message from the Editor: MINODA, Masahiko (Professor of Chemistry and Materials Technology)

As someone involved with the KIT International Journal since its inception, I'd like to thank you for your support and assure you that we are working to further upgrade our content. Already, I feel the journal is helping expand networks and demonstrate KIT graduate support. Our current focus is to become an ideal two-way communication medium between readers and KIT.



Cover: Maple Leaves in Chion-in Temple and String Balloon Souvenirs from Arashiyama

Mr. DELUCA, Marco
International Student from Italy
Doctoral Program of Materials and Life Science