

n e w s l e t t e r



Faculty of Engineering, Kyoto University

京都大学工学部国際交流ニューズレター

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International Course for Graduate Research Students in Engineering at Kyoto University



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The Kyoto University Faculty of Engineering opened a program called *International Course for Foreign Graduate Research Students* in 1982. Since then, more than a hundred foreign students from almost every part of the world have participated in this program. Organization and operation of the International Course come under the general supervision of the Kyoto University Faculty of Engineering and financial support for admitted students is provided by the Japanese Government's Ministry of Education, Science and Culture (MONBUSHO). The *primary objectives of the International Course* are both to deepen the engineering knowledge and to enhance the professional caliber of students and young researchers. At present the course admits students to the following five engineering fields; (1) civil engineering, (2) chemistry and chemical engineering, (3) electrical and electronic engineering, (4) mechanical engineering and (5) metallurgy and material science. To meet the program's objectives, students spend a year and half in Kyoto actively participating in graduate level academic activities. Another important part of the International Course is the development of a broad international understanding among these young engineers through their experiences in Kyoto. To achieve these goals, the International Course consists of both *professional and cultural parts*. The **professional part** includes research work and/or classroom studies, depending on the needs of each participant, conducted in English, while the **cultural part** covers Japanese language training and studies in traditional and modern Japanese culture.

It might be worthwhile for both foreign participants and Kyoto side host advisors to share some thoughts and viewpoints based on more than ten years of experience with the International Course so that the objectives will be better accomplished in the future. First, prospective foreign participants need to be aware that the academic research system of Japan differs substantially from those of Europe and the US although they appear similar. For example, an article on the Japanese research system compared the proportion of university students in natural science departments and engineering departments in

British and Japanese universities, finding that Japanese overwhelmingly enter engineering while the British pursue natural science. The ratios of engineering students to natural and life science students are as follows;

	Japan	U.S.	UK
engineering	6	0.8	0.6
natural science	1	1	1

Does this really mean that the Japanese significantly neglect natural science? It could, but only if Japanese and British universities used the same definitions for research belonging to natural science or engineering departments. There is, as a matter of fact, substantial amount of research conducted in engineering departments in Japan which in European and American universities would usually be carried out in science departments. It is therefore advised for the foreign participants to look closely at the specific content of research conducted in each department. Secondly, we Kyoto side advisors should be aware of initial and sometime lasting conflicts and embarrassment which foreign participants experience when they come to Kyoto. The majority of these criticisms are directed at the Koza (research unit) hierarchy and insularity. The Koza system, common in but unique to Japan, provides a framework for delegating research responsibilities; however, some foreign participants are concerned about the rather closed atmosphere of communications.

In spite of number of obstacles to be overcome, we are certain that academic exchange programs including this International Course never fails to help both visitors and hosts break the fences of misconception and misunderstanding when academic issues are kept open for spontaneous discussions and both sides respect other cultural backgrounds.



"Welcome Party" for International Course participants

ウィスコンシン大学——マディソン校工学部



谷 垣 昌 敬

化学工学教室助教授

工学部の協定締結校巡りをシリーズで掲載することになり、今回第一弾としてウィスコンシン大学マディソン校を紹介します。同校と本工学部の関係は、1957年に Olaf A. Hougen 教授がフルブライト交換教授として化学工学教室に半年間滞在されたのが実質的な交流の第一歩で、その後、同教室では教官の相互訪問、共同研究、学生交流などの実績を重ねてきており、1980年8月学生交流に関する教室間の協定が結ばれました。1990年8月教官交流や共同研究なども含む工学部間の新たな協定が本工学部の第一号として締結され、現在では電気・電子工学、情報工学など他の分野にも交流が広がってきています。

ウィスコンシン大学はアメリカ合衆国の中西部にある州立の大学で、1849年に創立されました。現在学部生約29,000名、院生約12,000名と教官約2,400名を擁するアメリカでも有数の大きい大学で、マディソン校は同州内にある13のキャンパスの内最大のものであります。

マディソン市はウィスコンシン州の州都であり、「ミューンヘン、札幌、ミルウォーキー」という宣伝文句で知られているビールの産地ミルウォーキーの西120kmに位置しています。市の人口は約20万で4つの湖に囲まれた美しい田園都市です。ある統計によれば、隣のミネソタ州ロチェスター市に次いでアメリカ合衆国で2番目に住みやすいところとのことです。大学は最大の湖であるメンドタ湖に面しており、夏はヨット、カヌー、水上スキー、釣りなどを、また冬は、全面が結氷した湖でアイススケートやアイスフィッシングなど、また、近くの山(丘)ではスキーも楽しむことができます。

工学部は教官22名、学部生3,531名、院生1,193名(1992-93年統計)であり、下記の9つの Department からなっています。

() 内は教官数。

- Chemical Engineering (21)
- Civil and Environmental Engineering (31)
- Electrical and Computer Engineering (58)
- Engineering Mechanics and Astronautics (14)
- Engineering Professional Development (19)
- Industrial Engineering (23)
- Material Science and Engineering (19)
- Mechanical Engineering (34)
- Nuclear Engineering and Engineering Physics (15)

この他、数多くの Interdisciplinary Degree Program, College Consortia, College Center, College Service などがあり、先端的な分野での活発な研究活動とともに学生への柔軟な教育と支援が行われています。

私自身が留学経験のある(1965-72) Chemical Engineering Department も世界第一級にランクされ、レベルの高い教育・研究が行われています。ウィスコンシン州は酪農を中心とする農業州で、化学工業とのつながりは希薄であり、なぜこのようなところで化学工学が発達したのか不思議だったのですが、現場から離れているからこそじっくり基礎から捉え、化学工学をサイエンスとして体系化する土壌があったともいえます。この点では京都大学と似ているのかも知れません。

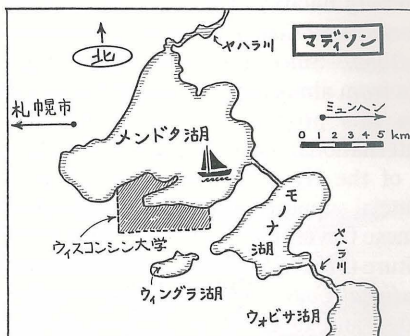
学期は Semester 制で、秋(9-12月)、春(1-5月)と3-8週間の夏学期があります。各科目は階層構造的に整理されており、学生一人一人が Advisor の指導の下に、自分の目標を設定し、一年生の時から計画的に履修する科目を選択できるシステムになっており、必修科目というのはありません。入学試験はなく、大学

の門戸は比較的広く開かれています。各科目の単位を取るのには難しく、半数近くが途中でドロップアウトし、しかも、正規の4年間で必要単位を取得して無事卒業するものは25%程度とのことです。1つの科目は平均週3回の講義があり、毎週簡単なクイズと宿題が課されます。成績によって将来の就職先および給料が決まるということが大きく影響している点もありますが、学生は非常によく勉強します。

大学院へは全国から優秀な学生が集まってきており、外国からの留学生の割合も高いです。院生の一部は MS (Master of Science, 修士) を取得して卒業しますが、大部分は Ph. D. (Doctor of Philosophy, 博士) コースに入ります。日本のように修士を終えてから博士コースに入るのではなく、院生で Qualifying Examination と呼ばれる資格試験に合格すれば Ph. D. コースの学生となり、その後、Preliminary Examination と呼ばれる予備試験に合格すれば Doctor Candidate として論文を提出する資格ができる制度になっています。

正規のコース学生以外に特別研究学生という制度もあり、一年程度の短期の留学も可能です。本工学部との間に相互の授業料免除の措置もあり、取得した単位も本工学部で認定される道が開かれています。学生諸君の積極的な参加を期待します。

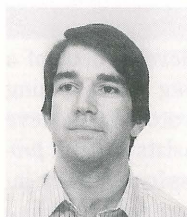
昨年12月、アメリカンフットボールのチームである“Badgers”が東京ドームでミシガン州立大学と対戦し、大勝しました。さらに、ローズボウルでも勝利する快挙を成し遂げました。京都大学のギャングスターズとの親善試合が見られる日を夢みて、両校の国際交流に精を出したいと思っています。



R.B.Bird教授(ウィスコンシン大学化学工学部、1962年本工学部に半年間滞在)直筆の地図

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INTERNATIONALIZATION-NOT ONLY FOR GRADUATE STUDENTS!



Dirk SCHANZENBACH

Guest Research Associate
Department of Synthetic Chemistry
and Biological Chemistry

In 1986, as an undergraduate of the University of Mainz, Germany, I got the chance to visit Kyoto University for a practical course in polymer chemistry. A few years later, on a private trip, I deepened my sympathy for the country. Since February 1993, I'm back in Kyoto as a "post-doc" in the field of organometallic chemistry. During both of my scientific stays in Kyoto I have met very kind supervisors, as well as nice laboratories, so I'm satisfied with my situation here. Yet I noticed a change on which I'd like to comment.

During my first stay in Kyoto, it surprised me to find many connections to Europe in everyday life. There were English, French and even German news and educational programs on TV. At Kyoto University, most chemistry students learned German. It was only meant for translation of scientific texts—hardly enough to have conversation—but they got an overall idea of life

and science in Germany, and though they had never been to Europe some of them surprised me with their knowledge. Since then, however, this situation has somehow changed. Today, even mentioning that European universities are rather different from Japanese ones invariably makes students exclaim "honto?" or "sugoi!" Obviously, the possibilities to educate oneself in this direction have been reduced, or have become less attractive. As a result, the knowledge of young people about Europe has dropped almost to the level of remembering famous tourist attractions. It seems to me that the often quoted "Internationalization" is rather translated as "Americanization" in a more general fashion.

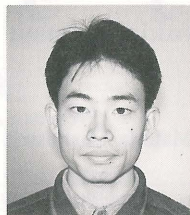
At the moment, "Internationalization" is one of the most stressed catchwords at Japanese universities. Many essays on this topic are urging Japan to increasingly open research institutes to foreigners, and sure enough, the number of foreign students and researchers in Japan is steadily growing. This fact is proudly presented whenever the matter is discussed, but to internationalize science takes more than to think in terms of mere quantity. To enhance international communication over the long term, it's essential to revive young people's attention to foreign ways of thinking. One of the most impressive "internationalizing" experiences, especially for undergraduates, is studying abroad. Unfortunately, the educational system at Japanese universities does not encourage students to go overseas before graduating. Having to face a maze of bureaucratic obstacles to apply for a fellowship keeps most students from doing so. If successful internationalization is desired, the system has to be updated. Due to this system, the academic careers of Japanese students are very much preprogrammed, and even during their master's or doctoral programs, they are rather dependent on their supervisors. However, the students of today will soon be in responsible positions, and how will they be able to carry on an international dialogue if they have never really experienced it themselves? It has to be the task of the supervisors, rather than of remote offices, to advertise the possibilities of foreign studies, and to stimulate, acknowledge and support activities of their students in this regard.

Since 1985, thanks to the personal commitment of several professors, every year a group of undergraduates from Mainz has come to Kyoto for a practical course in polymer chemistry. Though their studies in Germany have been prolonged by some months because of their stay in Japan, all of them appreciated it as a very valuable part of their academic career. It's a good example, but only a "one-way exchange." So far, only very few fellows from Kyoto University have been to Mainz, whereas there are Germans doing their whole doctoral programs in Japan. Discussing this with Japanese students, I once heard the incredible explanations that they were afraid of "losing face" when asked about their research and laboratories, or that their Japanese supervisors might not approve of them exchanging know-how with foreign researchers. I deeply hope that these are *not* the true reasons. Intensive international exchange in science provides an immense source of experience, ideas and incentive, so that participants can only stand to gain.

Germany has always been open towards Japan, especially with regard to cooperation in research. It's my and others' opinion that Japan should take advantage of this fact, and reinforce its scientific focus on Germany, which is going to be an important part of the European Community. Many European universities would certainly appreciate an enhanced *mutual exchange* of students and researchers with Japanese institutes. Therefore this essay is not criticism—it's an invitation!

SIYSS (Stockholm International Youth Science Seminar) に参加して

—1993年度ノーベル賞式典参加体験記—



佐野 紀 彰

京都大学大学院工学研究科
化学工学専攻博士後期課程1年

12月3日から一週間、スウェーデンの首都ストックホルムにおいて SIYSS (Stockholm International Youth Science Seminar) というノーベル財団の支援する国際交流プログラムがありました。今回の参加国は14カ国、オーストラリア、ベルギー、カナダ、ドイツ、イギリス、クウェート、オランダ、ノルウェー、プエルトリコ、スペイン、スウェーデン、スイス、アメリカ合衆国、日本で、多い国で学生5人、少ない国で学生1人が本プログラムに派遣され、選ばれた学生計30人が12月初旬のストックホルムに集合しました。そして今回、二名の日本の学生代表として私と学習院大学4回生(当時)が派遣されました。SIYSSに参加して得たことはたくさんありましたが、まず第一に、それぞれの国々を代表するような学生達と知り合い、様々な事を議論する機会を得たこと、第二に、ノーベル賞式典という科学者にとって特別な意味を持つ最高の式典に出席する機会を得たこと、第三に、多くのスウェーデンの進んだ大学および研究所を見学出来たこと、第四に、スウェーデンという日本と異なる文化の中で生活出来たこと、等々、いずれも刺激的で、将来国際的な科学者になろうとする者にとって大変役に立ち、そして励みになる経験でした。

今回の SIYSS プログラムでは、スウェーデンの最も歴史のあるウプサラ大学、ノーベル医学・生理学賞を決定しているカロリンスカ研究所、ノーベル物理学賞及び化学賞を決定しているスウェーデン王立科学研究所などの見学、ノーベル文学賞、物理学賞、化学賞の今年度受賞者達の講演聴講、ノーベル財団による受賞者達のためのレセプション参加、そしてノーベル賞授与式出席、その後の晩餐会、舞踏会参加と、あまりにも特別な、そして刺激的な行事の連続でした。このような行事に参加できる自分の幸運に驚くことはもちろんですが、これらの行事を包括する特別な国際交流活動にスウェーデンの学生達が大きく貢献している姿にも大いに心打たれました。世界的な国際交流の重要性がますます高まりつつある今、このような特別な国際交流プログラムを学生達が引っ張っていることに大きな印象を受けたのです。

もちろん一連のノーベル賞の行事に参加したという体験も忘れられないものでした。その中でも特に、ノーベル財団のレセプションにおいて、今回の受賞者達と会話を持つ機会があり、その後一緒に写真を撮らせていただき、大きな記念になりました。また、ノーベル賞授与式(物理学賞、化学賞、医学・生理学賞、経済学賞、文学賞の授与)および晩餐会は、受賞者のスピーチあり、音楽あり、パフォーマンスありで、荘厳であると同時に見事なほど美しく、その様子は私の想像を遥かに上回るものでした。

帰国後、SIYSSでの体験を過去のものとせず、この時学び得た数々の事を忘れずに実際役立ててゆく方法を考えることが私の現在の課題であると思っています。



ノーベル賞授与式

The Second Kyoto-Siena Symposium



Yukio IMANISHI

Professor
Department of Material Chemistry

A General Memorandum on the Kyoto University/Siena University Exchange Program was signed by then-President of Kyoto University, Professor Yasunori Nishijima, and the Rector of the University of Siena, Professor Luisi Berlinguer, on 22nd November 1989. The Second Kyoto-Siena Symposium (KSS), which was held from 27th September through 2nd October 1993 in Kyoto, was one of the activities mentioned in the memorandum. Professor Yukio Imanishi chaired the symposium.

The Second KSS started at 5 p.m. on 27th September, with an opening ceremony held in Room 101 of the Kyodai Kaikan. In the opening ceremony, opening addresses and speeches were given by the President of Kyoto University (Professor Hiroo Imura), the KSS Siena Representative (Professor Rolando Barbucci), and the Cultural Attache of the Italian Embassy (Professor Gianni Fodella) (see photograph). The opening ceremony led into a welcome reception with light meals and drinks after 5.30 p.m., and about 100 attendees engaged in friendly conversation.

The KSS consists of three sections: natural science section [Main theme: The development of science for improvement of human life. 12 Japanese papers and 10 Italian papers], economics section [Main theme: Problems of industrial economics under environmental and resources constraints. 9 Japanese papers and 6 Italian papers], and humanities, arts & literature section [Main theme: The role of image in the humanities: a cross-cultural, anthropological approach. 11 Japanese papers and 9 Italian papers]. Scientific programs were carried out throughout the 28th and 29th of September, and in the morning of 30th September. The paper presentations and discussions were lively, but the number of participants was not very large.

For better mutual understanding between the people of Kyoto and Siena, which are important historical cities, a roundtable discussion entitled "The Image of Cities in the 21st Century" was organized. The roundtable discussion was held in the afternoon of 30th September in the Kyoto Shinbun Bunka Hall. Problems accompanying the development of historical cities toward the future were analyzed and discussed by Professors Luciano

Patetta (Milan Institute of Technology), Kiyoshi Kawasaki (Kyoto University), Yujiro Nakamura (Meiji University), and Takamitsu Sawa (Kyoto University), from various viewpoints. Their opinions and proposals were pulled together by a moderator, Professor Hayao Kawai (International Research Center for Japanese Studies). Japanese-English or Italian-Japanese language interpreters were provided. The individual opinions and proposals were very unique and exciting. However, the time was too short to have enough discussion among the four speakers, and with the audience.

For cross-cultural exchange, a Warabi-za performance of Japanese folk music and folk dance was held in the afternoon of 1st October. In other cross-cultural events, most of the Italian participants and some Japanese participants visited the University Museum (Faculty of Letters), Heian Shrine, Nijo Castle, Kanze Kaikan (Noh Stage) and Shugakuin Imperial Villa, during time when no scientific program was scheduled. Through these visits, participants touched the spirit of Japanese culture.

The closing ceremony was held in the morning of 2nd October, in the Kyodai Kaikan, Room 101. Concluding addresses were given by the Former President of Kyoto University (Professor Yasunori Nishijima), the KSS Siena Deputy Representative (Professor Grazia Marchiano), and the Cultural Attache of the Italian Embassy (Professor Gianni Fodella).

The speeches, the scientific papers, and a summary of the roundtable discussion will be published in the "Proceedings of the Second KSS", by Kyoto University Press.

Financial support from the Monbusho International Scientific Research Program (05045029), the Japan Foundation, and the Spazio Institute are gratefully acknowledged. Sincere thanks are also due for support from Kyoto City, the Committee of the Kyoto 1200th Celebration, and Kyoto Shinbun.



Opening address by Professor Hiroo Imura

国際交流日誌 (平成5年10月1日～平成6年1月31日)

平成5年

- 10月8日(金) ノルウェー国 トロンハイム大学ノルウェー工科大学国際交流室 Sissel Herzberg 氏来訪
- 23日(土) アメリカ合衆国 ミシガン大学 Peter Banks 工学部長他2名来訪
- 25日(月) 平成5年度特別コース研究留学生入学式
- 29日(金) 中華人民共和国 中国企業製品開発管理研修視察団 高永光副司長他20名来訪
- 11月17日(水) 国際交流委員会
- 26日(金) オランダ国 デルフト工科大学 J. L. de Kroes 教授他学生一行来訪

- 12月8日(水) コロンビア国 ロス・アンデス大学 Juan Manuel Vargas 氏来訪

- 10日(金) アメリカ合衆国 ウィスコンシン大学マディソン校工学部 Thomas W. Chapman 副工学部長来訪
- 15日(水) 韓国 仁徳専門大学 金蔡元教授他6名来訪
- 22日(水) 国際交流委員会

平成6年

- 1月20日(木)～21日(金) 特別コース研究留学生見学旅行
- 25日(火) 韓国 全北大学校工科大学 関係者来訪
- 26日(水) 総合工学学術交流・NUS コーディネーター・ミーティング
- 26日(水) 国際交流委員会

The Committee for International Academic Exchange, Faculty of Engineering, Kyoto University, Kyoto 606-01, Japan
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606-01 京都市左京区吉田本町 京都大学工学部国際交流委員会