「新規物性機能探求」領域

“Japan-France Advanced School for Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism and Other Functions”

趣旨：京都大学における 21 世紀 COE プログラム「京都大学化学連携研究教育拠点」に参加する研究部局、およびフランス共和国レンヌ第一大学では、導電性、超伝導性、強磁性などの機能を持つ有機・無機材料系の合成・構造・物性・電子状態などについて活発に研究が行われており、ともに国際的な牽引役を果たしているところである。この利点を生かして、領域 2 では、2003 年 9 月に日本側（教官 22 名、学生 21 名）がフランスに出向き、レンヌ第一大学にて「第 1 回日仏バイラテラルシンポジウム」を、2005 年 5 月には、逆にフランス側を京都大学に招いて「第 2 回日仏バイラテラルシンポジウム」（京都大学側が教官 17 名、学生 30 名、フランス側からは教官 12 名、学生 8 名）を開催した。今回の「日仏アドバンストスクール」は、その 3 回目に相当するものである。教官、学生のパラレルセッション（口頭発表のみ）の過去 2 回とは異なり、講師によるレクチャーと学生によるポスターセッションという構成で行った。

開催場所：京都大学（時計台記念館・国際交流ホールⅢ）
開催日程：2006.7.16
参加内訳：教官、ポスドク 27 名　学生 51 名
相手機関の名前：主にレンヌ第一大学（その他グルノーブル大学、トゥールーズ大学など）

内容：　吉田キャンパス百周年時計台記念館内国際交流ホールにて、平成 18 年 7 月 16 日（日）に“Japan-France Advanced School for Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism and Other Functions (3rd Japan-France Bilateral Symposium:)”がレンヌ第一大学を中心としたフランス共和国教官と学生を招いて開催された。本ワークショップは 21 世紀 COE プログラム「京都大学化学連携研究教育拠点－新しい物質変換化学の基盤構築と展開－」の一環として、京都大学とレンヌ第一大学の間で 2003 年からおこなわれているものであり、主に領域 2 の活動に関連する、導電性、超伝導性、強磁性などの機能をもつ有機・無機材料系の合成・構造・物性・電子状態などが主な研究対象である。過去二回の日仏バイラテラルシンポジウムでは、日仏の大学院生（M2 以上）が英語で 20 分間のプレゼンテーション（口頭）をし、教官も同様のプレゼンテーションを平行して行うというバイラテラルシンポジウム形式であったが、今回は日仏の 2 名ずつの著名な講師による各一時間のレクチャー、中国人講師による 20 分間の研究講演、学生によるポスタープレゼンテーションという形態にした。自由に討論しながら、国際的な研究交流を通じて国際社会において通用する研究者を育成することを目的とした。

京都大学側の代表は理学研究科齋藤軍治教授、フランス側の代表はレンヌ第一大学固体・無機分子化学研究室の Lahcene Ouahab 教授で、低温物質科学センターの矢持秀起教授、理学研究科の陰山洋助教授を併せて四名がオーガナイ

ズを行った。また、CEO 秘書の植野由美子さん、藤橋明子さんには、旅費の手続き、プログラム冊子の作成などで大きな貢献をされた。当日には、齋藤研究室と吉村研究室の学生が会場設営、会議進行に協力した。参加者は、京都大学側が教官 19 名、学生（博士課程、修士課程、四回生）43 名、ポスドク研究員が 6 名、フランス側が教官 3 名、学生 5 名であった。その他、東工大から教官 1 名、学生 2 名、中国から教官 1 名、アメリカ合衆国より学生 1 名の参加があった。

齋藤軍治教授による開催宣言がおこなわれた。これまでの二回の会議の概要と成果について説明があった。その後、レンヌ大学の Lahcene Ouahab 教授による講義があった。分子を基盤とした伝導体と磁性体についての研究の初歩から最先端までを解説された。次に、Lydie Valade 博士による講義があった。CNRS トゥールーズの Valade 博士によって、分子を使ったデバイスの設計プロセスの原理と指針について解説された。引き続き、Zhejiang 大学の M. H. Fang 教授による金属管化合物における非フェルミ液体的振舞についての講演があった。昼食休憩のあと、工学研究科の北川進教授により、錯体における配位空間を自由にコントロールする合成手法とそれをつかったガス吸蔵などへの応用についての講義があった。引き続き、レンヌ大学の Werner Paulus 教授によって、酸化物を対象として電気化学的な手法を用いることで室温における高速酸　素伝導を固体化学、構造化学的な立場から解説された。

過去 2 回は、学生と教官が独立したシンポジウムであったため、学生による司会進行、質疑応答が積極的にあったが、今回は教官と合同であったためか学生からの質問が全くなかったのは反省材料である（教官からの質問のみであった）。学生のために講義（しかも一時間）の準備をして質問がないというのは特にフランス人講師に対し、大きな失望を与えたのではないかと感じる。あるフランス人講師は、「日本の学生はシャイだから」と理解を示しておられたが、全員とはいわないまでももう少し元気のある学生がでてくることを望みたい。もちろん、英語の聞き取りの問題があるために講演に対する理解が不十分であったことも考えられる。しかし、プログラムはウェブサイト上で閲読できるようにしていたので、これは理由にならない。

講演セッションが終了後は、学生のよるポスターセッションが行われた。このポスターセッションに先立ち、各学生による 4 分間スピーチが、Ouahab 教授の司会のもと進行された。日本人学生のうち国際会議（英語）での発表が初めての人が多く含まれていたにもかかわらず、全てが堂々とした立派なプレゼンテーションであった。事前の入念な準備と練習を積んでいたことがうかがえ非常によかった。4 分間厳守といっていたが、緊張のためか時間オーバーする学生が日仏の学生とも数多くみられたが、このような体験と失敗を経験してのみ徐々に上手になっていくもので

あろう。そういう意味で、各学生にとって非常に貴重な経験になったものと思われる。ポスターセッションは、飲食をしながらの和やかな雰囲気で行われた。各発表者のポスターのもとには、参加者がつめかけ、多くの質問や意見などを与えて、それに対し、一生懸命英語で答えていた。また、日本人学生が積極的に英語で質問をしている姿もあった。上述した、講演での元気のなさとはまさに対照的であり、少し安心した。考えてみると、ポスターセッションの学生は、講演のときには、4 分間スピーチのことで頭が一杯だったのではなかろうか。もし、ポスターセッションと講演を逆にするとどうなったであろうか。ひょっとしたらポスターでの緊張がとけ、英語に自信がついた学生からの質問があったのかもしれない。

全ての講演が終了したのちに、Lahcene Ouahab 教授による総括と今後の展望が語られた。前回と同様に、Continuity（継続性）の重要性が語られ、研究、友好、文化の交流を続けていく決意が感じられた。このシンポジウムは、丁度祇園祭のクライマックス（宵山）と重なっており、シンポジウム終了後は、フランス側参加者は京都の文化を多いに楽しまれたことを記して筆を置きたい。

（記　陰山　洋）

Report on the Japan-France Advanced School for Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism and Other Functions

Robert Fairchild

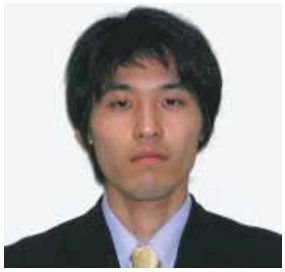
Georgetown University and
Graduate School of Engineering
Kyoto University

I had the wonderful opportunity to attend the Japan-France Advanced School this summer in Kyoto. I had the distinct advantage to be the only American at this conference and was able to meet a variety of scientist from both France and Japan. During the summer I was on an NSF fellowship which allowed me to spend the summer at Kyoto University in Prof. Kitagawa's laboratory. While there I was approached about the opportunity to give a presentation at the Advanced School and was instantly excited at the chance to give a talk and poster in Japan.

Initially, I was worried of the cultural and language barrier that a conference in a foreign country might bring to bear. When I first arrived those fears were quickly dispelled when I met the fellow researchers who were both attending and presenting. I speak a bit of Japanese myself and had several fruitful conversations with colleagues in attendance. Culturally, French and Japanese cultures are quite different and it was nice to be able to observe such a global scientific perspective and compare it to what I am used to at home. Even more interesting was the fact that everyone in attendance gave their presentations in English, which I found quite impressive. I actually felt a little guilty giving my presentation as the only native English presenter at the entire conference.

During the conference I presented my research to a very receptive audience and made valuable contacts within my field from both France and Japan. I was surprised to see several presentations that were of research that I had previously not seen. After my presentation, I was delighted to see how many people were interested in both my work, and the opportunity to find out a little about myself and my experiences both in the United States as well as during my stay in Kyoto. During this poster session I had ample time to see the other posters on display as well as ask questions about their content. Overall, the Japan-France Advanced School for Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism and Other Functions was a great experience and greatly enhanced my summer research in Kyoto, Japan.

Report on the Japan-France Advanced School



Yoshihiro Tsujimoto

Department of Chemistry
Graduate School of Science
Kyoto University

The Japan-France Advanced School 2006 in Kyoto provided me a good opportunity to present my work in English and to communicate with foreign students. The program of the School was composed of an oral session by professors and a poster session by students.

The former session was very interesting to me because I could learn several physical properties in various organic and inorganic materials which are not familiar to me.

Four-minutes were allocated to each of the poster presenters to introduce their work before the poster session began. I tried to present the physical properties of a triple-layered pervoskite, an interesting compound we have successfully prepared. The oral presentation in English was my first experience and did not go as I hoped for. However, a number of professors and students came to my poster and expressed their interests in my work on the pervovskite, (CuCl) $LaNb_2O_7$. They also gave me helpful suggestions and critical comments on my project, which encouraged me to pursue further on my experimental study. I'd like to express my sincere thanks and appreciation to the organizers for giving me a chance to present my work at this Advanced School. I realized how important to have a command of English in science when it comes to presenting in international audiences.

Report on the Japan-France Advanced School for Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism and Other Functions

Atsushi Himeno

Institute for Chemical Research
Kyoto University

I have participated in the *Japan-France Advanced School for Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism and Other Functions* held on July 16, 2006 at Kyoto University. This School gave me a great opportunity to develop my research concepts as well as good experiences in international communication in the sciences.

In our laboratory, nano-sized ferromagnetic samples are fabricated by electron beam lithography onto thermally oxidized Si wafers and their magnetic characters have been examined. We also have been developing chemical methods for fabricating a miniature sample. In this School, I gave a four-minute oral presentation introducing my poster entitled, "Magnetic ratchet effects in submicron magnetic wires with asymmetric notches." The discussions with other researchers in different fields of material sciences during the poster session were a very meaningful experience for me as an investigator, which has encouraged me to pursue my research on magnetic materials.

Finally, I would like to thank the organizers for providing me an ideal venue for introducing my research.

France-Japan Bilateral Educational and Scientific Activies in 21st Century COE Program, Kyoto University Alliance for Chemistry

Dr. Lahcène OUAHAB
Director of Research in CNRS

The 21st century Kyoto University COE program started in 2002. After the kick-off date, Professor Gunzi Saito, the leader of this program, asked me on whether University of Rennes 1 would accept to contribute to this program. He explained the purpose of his program in the following main four fold points: High level scientific collaborations, active students' involvement (training, seminars, exchange, and discussions), friendship, and continuity.

Since, there was already collaboration between Kyoto University and University of Rennes 1 both in Physics and in Chemistry through the bilateral exchange (CNRS-JSPS) and a NEDO project (2000-2003), we immediately accepted to take part in the Kyoto COE project.

As requested by Professor Saito in his letter on March 17th, 2003 (see Annex 1), our first action was scheduled for September 2003 as an International Student Seminar on the theme "Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism and any other Exotic Functions." This seminar took place in Rennes on September 27-28, 2003 and it was organized as two parallel and independent sessions, one session for students and the other for seniors.

As the continuity is one of the key parameters of the Kyoto University COE, and since University of Rennes 1 was very happy and proud to contribute to the success of this program, Prof Saito invited us for the next Kyoto-Rennes seminar in Japan two years later in 2005 and proposed that the 21st Century COE program partly should support the airfare and staying fees to the French participants. And this second seminar took place in Kyoto on May 5-6, 2005. From the French side, 11 students and 12 seniors attended.

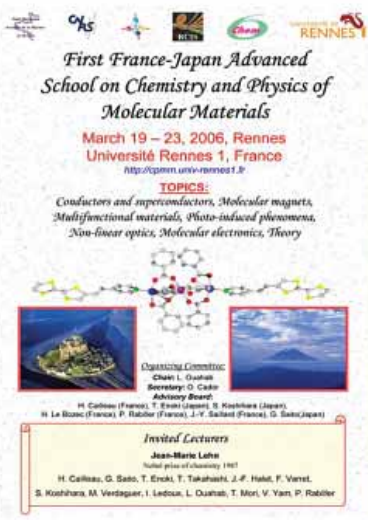
Before and after Bilateral Symposium in Kyoto on May 5-6, 2005, we had two important Japan-France meetings and one international advanced school to which the 21st Century COE Kyoto University Alliance for Chemistry participated and contributed significantly. These meetings were organized in the frame of the CNRS-JSPS exchange programs which include Rennes, Tokyo Institute of Technology, Kyoto University, and other French and Japanese Universities and Institutes.

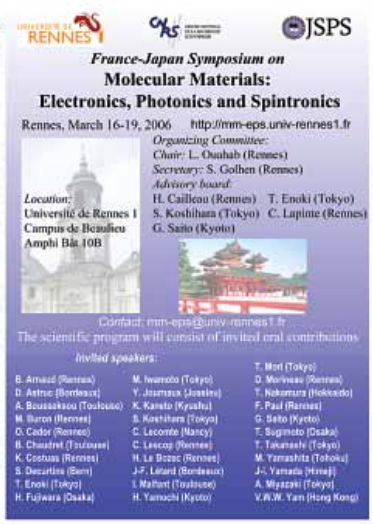
1- A joint symposium entitled "New Type of Functionality Materials Based on Organic-Inorganic

Hybrid Compounds" which took place in Tokyo area on April 23-24, 2004.

2- An advanced school entitled "First France-Japan Advanced School On Chemistry and Physics of Molecular Materials" was held in Rennes on March 19 - 23, 2006. Twenty five (25) Japanese students attended that school among them 4 from Kyoto University. The lectures were done by French and Japanese teachers. **Prof Jean-Marie Lehn, 1987 Nobel Laureate in Chemistry gave a lecture during this school**.

3- A symposium entitled "France-Japan Symposium on Molecular Materials: Electronics, Photonics and Spintronics" took place in Rennes on March 20-23, 2006.





The last school entitled "Japan-France Advanced School for Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism, and Other Functions" took place in Kyoto on July 16, 2006. Three French teachers (2 from Rennes) and 5 students attended.

I have also participated as an invited speaker to the following three international meetings organized by the 21st Century COE Kyoto University Alliance for Chemistry: July 18, 2003: 21st Century COE on Kyoto University Alliance for Chemistry, International Symposium: Design and Control of New Functionality in Molecular Solids; July 17-21, 2005: International Symposium on Molecular Conductors Novel Functions of Molecular Conductors under Extreme Conditions Scientific Research on Priority Areas, Japan, Hayama, JAPAN; and December 15-17, 2005: PACIFICHEM2005

Symposium # 115, "Science and Engineering of the Future with Multifunctional Conducting Molecular Materials," Honolulu, HI, USA.

The next advanced school and Japan-France Symposium are already scheduled for next March 2007 in Tokyo. Students and seniors from Kyoto University are expected to attend. **Prof Hideki Shirakawa, the 2000 Nobel Laureate in Chemistry, has already accepted our invitation to give a lecture in the school**.

Conclusion

During the last four years, we had very strong exchanges and activities between France and Japan, thanks to the effective supports from the 21st Century COE Kyoto University Alliance for Chemistry, University of Rennes1, the CNRS and the COE of Tokyo Institute of Technology. For the first time, theses exchanges have targeted the active involvements of students from both sides and they have had a big impact on their trainings by taking part in the international seminars and schools abroad where they presented and discussed their results with the participating students and staff members, and they were able to build a strong friendship among themselves. For sure the benefits for students from this COE program are enormous.

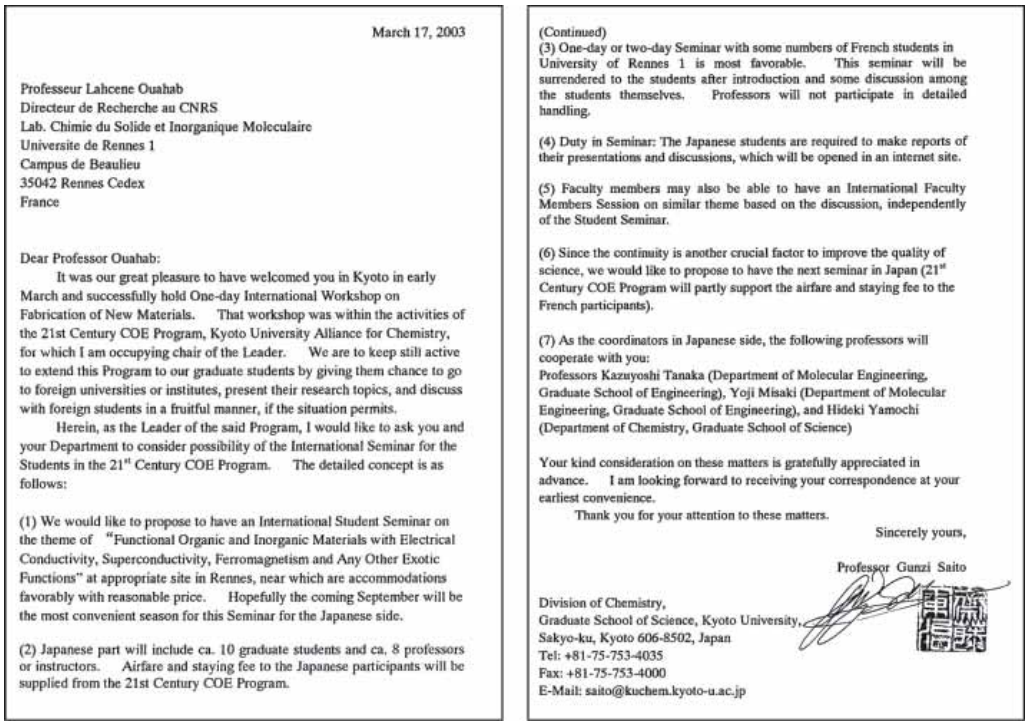
For all the above mentioned meetings and schools, we have been maintaining the high scientific level of our exchange by opening our seminars to other outstanding scientists. For example, Prof Jean Marie Lehn gave a lecture in the advanced school last March 2006 and Prof Hideki Shirakawa is scheduled to participate for the next advanced school in Japan.

Of course, these fruitful collaborations and activities should continue with the expansion of the existing programs or by the creation of new programs. In this context, the school and seminar for 2007 are already fixed and some plans are under discussion for 2008.

It is worthy to note the very friendly atmosphere which we had during these events. In my opinion as one of the main organizers in these exchanges, there is no doubt that we are beyond the goals fixed by the 21st Century COE Kyoto University program for the four main points, the high scientific levels, students training, continuity, and friendship. Furthermore, all the expected objectives for the *Excellence* are accomplished.

(August 16th, 2006)

ANNEX 1



March 17, 2003

Professeur Lahcene Ouahab
Directeur de Recherche au CNRS
Lab. Chimie du Solide et Inorganique Moleculaire
Universite de Rennes 1
Campus de Beaulieu
35042 Rennes Cedex
France

Dear Professor Ouahab:

It was our great pleasure to have welcomed you in Kyoto in early March and successfully hold One-day International Workshop on Fabrication of New Materials. That workshop was within the activities of the 21st Century COE Program, Kyoto University Alliance for Chemistry, for which I am occupying chair of the Leader. We are to keep still active to extend this Program to our graduate students by giving them chance to go to foreign universities or institutes, present their research topics, and discuss with foreign students in a fruitful manner, if the situation permits.

Herein, as the Leader of the said Program, I would like to ask you and your Department to consider possibility of the International Seminar for the Students in the 21st Century COE Program. The detailed concept is as follows:

(1) We would like to propose to have an International Student Seminar on the theme of "Functional Organic and Inorganic Materials with Electrical Conductivity, Superconductivity, Ferromagnetism and Any Other Exotic Functions" at appropriate site in Rennes, near which are accommodations favorably with reasonable price. Hopefully the coming September will be the most convenient season for this Seminar for the Japanese side.

(2) Japanese part will include ca. 10 graduate students and ca. 8 professors or instructors. Airfare and staying fee to the Japanese participants will be supplied from the 21st Century COE Program.

(Continued)

(3) One-day or two-day Seminar with some numbers of French students in University of Rennes 1 is most favorable. This seminar will be surrendered to the students after introduction and some discussion among the students themselves. Professors will not participate in detailed handling.

(4) Duty in Seminar: The Japanese students are required to make reports of their presentations and discussions, which will be opened in an internet site.

(5) Faculty members may also be able to have an International Faculty Members Session on similar theme based on the discussion, independently of the Student Seminar.

(6) Since the continuity is another crucial factor to improve the quality of science, we would like to propose to have the next seminar in Japan (21st Century COE Program will partly support the airfare and staying fee to the French participants).

(7) As the coordinators in Japanese side, the following professors will cooperate with you:
Professors Kazuyoshi Tanaka (Department of Molecular Engineering, Graduate School of Engineering), Yoji Misaki (Department of Molecular Engineering, Graduate School of Engineering), and Hideki Yamochi (Department of Chemistry, Graduate School of Science)

Your kind consideration on these matters is gratefully appreciated in advance. I am looking forward to receiving your correspondence at your earliest convenience.

Thank you for your attention to these matters.

Sincerely yours,

Professor Gunzi Saito

Division of Chemistry,
Graduate School of Science, Kyoto University,
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Tel: +81-75-753-4035
Fax: +81-75-753-4000
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「新規物質創製変換」領域

“Trilateral Workshop on Organic Chemistry”
日台交流プログラム

趣旨：野副鉄男博士が 1937 年より台湾の台北大学教授として教育と研究に携わり、多大な成果を挙げて以来、有機化学分野での台湾と我が国との間には永い交流がある。本 21 世紀 COE プログラム「京都大学化学連携研究教育拠点」では、国際社会に通用する研究者を育成することを目的とする国際交流事業プログラムの一環として、京都大学と台湾中央研究院化学研究所ならびに国立台湾大学の化学系で有機化学を専攻する学生間の交流プログラムを 5 年度にわたり行った。初年度は台湾側で、3 年次は京大側でワークショップを開催した。5 年次は、より緊密な交流を図るため互いの学生を三週間程度交換し、それぞれ先方研究室に滞在して研究を行い、より緊密な交流を図った。

一回目
開催場所：台北中央研究院化学研究所
開催日程：2003.1.17 ～ 19
参加者内訳：教員 26 名　学生 47 名
相手機関の名前：国立台湾大学・台北中央研究院化学研究所

二回目
開催場所：京都大学（桂キャンパス・吉田キャンパス）
開催日程：2004.9.4 ～ 6
参加者内訳：教員 33 名　学生 47 名
相手機関の名前：国立台湾大学・台北中央研究院化学研究所

三回目
開催場所：京都大学（桂キャンパス・吉田キャンパス）および国立台湾大学
開催日程：2006.5.15 ～ 8.10
参加者内訳：学生 18 名　14 研究室
相手機関の名前：国立台湾大学

内容：　まず第 1 回として、台北の中央研究院化学研究所において平成 15 年 1 月 17 日（金）から 19 日（日）までの日程で“The First Trilateral Workshop on Organic Chemistry”が開催された。工学研究科の村上教授と中央研究院化学研究所の Luh 教授を代表とし、Chao 副研究員と学生の Lin 君、Tseng 君、白川君、Lee 君を組織委員として運営にあたった。参加者は、日本側からは教員 13 名（理学研究科 6 名、工学研究科 4 名、化学研究所 3 名）と学生 24 名（理学研究科、工学研究科、化学研究所から各 8 名ずつ）の計 37 名、そして、台湾側から教員 13 名（中央研究院化学研究所 8 名、国立台湾大学化学系 5 名）と学生 23 名の計 36 名であった。研

究発表は学生の自由な討論を促すために、教員のみの会場と、学生のみの会場に分かれて行われ、学生は一人当たり 12 分、教員は一人当たり 20 分の口頭発表を行なった。殆どの学生にとって今回が初めての英語での口頭発表であり、大変貴重な経験になった。

第 2 回は京都大学桂および吉田キャンパスにて，平成 16 年 9 月 4 日（土）から 6 日（月）の日程で台湾側教官・学生を招いて開催された。林教授（理学研究科）、村上教授（工学研究科）、Luh 教授を代表とし、学生組織委員として京都大学側からは山本君、田嶋君、徳永君が，台湾側は Huang 君が運営にあたった。参加者は、日本側は教員 25 名（理学研究科 6 名，工学研究科 7 名，化学研究所 12 名），学生 24 名（理学研究科 6 名，工学研究科 7 名，化学研究所 11 名），台湾側からは Luh 教授を代表者とする教員 8 名、学生 23 名であった。セッションの準備進行はあくまで学生主体という位置づけのもとで、学生セッションのみを行った。まず英語で 7 分の口頭発表ののちに、約 40 分のポスター発表をする，という形式でおこなわれた。今回は教員も学生の研究発表に聴衆として参加したため、より緊張感のある発表となった。このような形態は，英語による口頭発表の経験の場を学生に提供するとともに，自由なディスカッションをおこないやすいというポスターの利点も活かせるように工夫されたものであり、期待通り学生間の活発な交流が行われた。

3 回目の交流は平成 18 年 5 月中旬から 8 月中旬にかけて日台双方の学生が互いの研究室を訪問しあい、実際の教育研究に触れながら緊密な交流を図った。台湾側からは 9 人の学生が京大側受け入れ研究室（林研究室・丸岡研究室（以上理学研究科）、村上研究室・吉田研究室・杉野目研究室・今堀研究室（以上工学研究科）、時任研究室・小沢研究室・川端研究室（以上化学研究所）を三週間訪問した。台湾側学生は研究室でのセミナーに参加し、受け入れ研究室のテーマにそった実験を行うなど、日本での教育に触れ、最先端の研究テーマについて学ぶ大変良い機会になった。また、日本側から 9 人の学生が台湾側の研究室を三週間訪問した。受け入れ研究室は Luh 研究室 , Wong 研究室、Leung 研究室、Chen 研究室、Fang 研究室、Liu 研究室であった。台湾側でも、受け入れ研究室のテーマにそった研究を進めた。台湾側の研究スタイルが日本のものと近く、特に違和感なく研究を進めることができた。普段とは異なる分野の研究に触れる意義も大きさに加え、やはり現地の学生と研究室でともに生活することによってこれまでになく緊密な交流が可能となり、参加した学生に重要な経験となった。台湾側の日本に対する関心は高く、日本語の習得熱も高かった。さらに、この形式による交流は参加した学生本人だけでなく、受け入れ研究室に所属する教員・学生にとって国際交流のための良い機会となり、非常に効果的であった。

以上のように、本交流事業は日台双方の多くの教官・学生に相互交流の機会を提供し、今後の更なる発展のための素地をつくったと思われる。これを契機として日台間の交流が様々な形で広がっていくと思われる。

（まとめ　忍久保　洋）

台湾側代表　T.Y. Luh 教授によるコメント

Exchange of students between Kyoto University and National Taiwan University

There have been extensive academic interactions among chemists at Kyoto University and National Taiwan University. Since the first bilateral organic chemistry meeting under the auspice of the International Conference of Organic Reactions held in 1989, organic chemists from both universities have started to collaborate in a range of different ways. For example, it becomes tradition to have small group organic chemistry meetings in every two to three years in Kyoto or in Taiwan. Faculty members from both universities enjoyed the atmosphere of these meetings very much and felt that it would be great if students can also be involved in such collaborative program. Accordingly, in 2003, some thirty Japanese students from Kyoto University visited Taiwan and an all-student conference was held in Taipei where the same number of Taiwanese students also participated. The second meeting was held in Kyoto in 2004. It turned out that students from both sides appreciate this opportunity. The meetings were very stimulating and I can say at least from Taiwan's side that some students may have changed their career goal after these meetings. For example, one student who originally was only interested in an industrial position after graduation is now pursuing postdoctoral research in the US and is looking for an academic position.

After these two previous meetings, professors from both universities felt that it might be even nicer if, for examples, a Japanese student is allowed to stay in a laboratory at the National Taiwan University for a longer period of time. Taiwanese students may take the same step to stay at Kyoto under such exchange program. In such cases, students may do few experimental works and will be exposed to a different environment, enjoy different culture, and make friends of similar age group to understand each other. It is believed that such exchange program will be beneficial particularly to this young generation. In the year of 2005, at the suggestion of Professor Masahiro Murakami, such exchange program was executed. At this stage, the program just started and first batch of students have already finished their exchange visits. From the impression of students, they all are excited about this opportunity. They showed their better side, but they also found their weakness. Although there might be language barrier in the beginning, they fortunately have same chemistry language. Through their broken English, students from both sides can experience mostly for their first time by staying in a foreign country. Such short stay would give them some impact in their future life and in particular, their future scientific career.

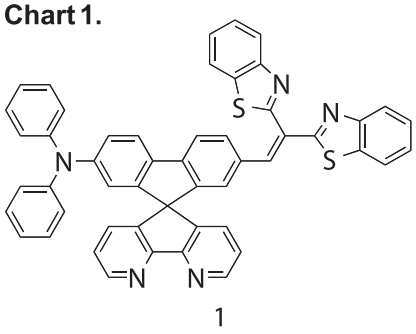
Report on Kyoto Univ. - NTU Student Exchange Program

Yuki Shibano

Department of Molecular Engineering
Graduate School of Engineering
Kyoto University

In the laboratory where I joined, some of the members were working on the development of new metal-sensing materials. During these studies, they noticed that the addition of some kinds of metal ion such as Cu(II) to the solution of compound **1** yielded unexpected new absorption bands in the NIR region. My research topic during this program was to elucidate the origin of this NIR absorption. It had been revealed that the presence of a spiro group or a bisbenzothiazole moieties did not affect the behavior of the NIR absorption. Thus, I have synthesized compound **2** to investigate effects of an amino group on photophysical and electrochemical properties. From the electrochemical measurements in acetonitrile, it has been suggested that thermal electron transfer from **2** to Cu(II) was energetically possible. Furthermore, the new absorption bands at around NIR region have been observed when Cu(II) was added to the solution of **2** in acetonitrile. Taking into account the fact that the radical cations of aromatic compounds generally have absorption at longer wavelength than those of parent neutral molecules, the origin of the NIR absorption of **2** was assumed to be the electron transfer from **2** to Cu(II), leading to the formation of the radical cation of **2**.

Chart 1.



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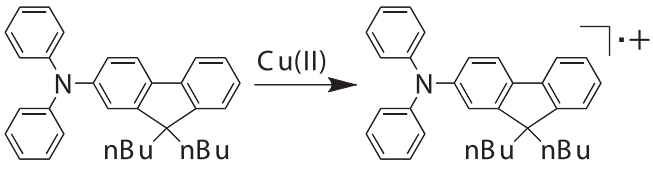
Scheme 1.



2

Other than the research I performed in Taiwan, it was meaningful to me that I could come into contact with Taiwanese culture and meet many Taiwanese. It was also fruitful for me to speak in English every time because this was my first time to visit foreign laboratory and study in foreign laboratory.

Last of all I would like to appreciate the organizers of this program. I hope that this exchange program will continue for many years to come.

The Report of Kyoto Univ. - NTU Student Exchange Program

Masahiko Shimada

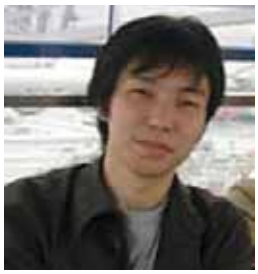
Murakami Laboratory
Department of Synthetic Chemistry and
Biological Chemistry
Graduate School of Engineering
Kyoto University

I went to Taiwan as an exchange student in the period of 29th June to 20th July, 2006 and participated in the Professor Ken-Tsung Wong research group of the National Taiwan University. The three weeks gave me a lot of unforgettable memories.

The chemistry of Prof. Wong laboratory was different from my research in Japan. Their research interests are focused on the synthesis and molecular design of organic materials for optoelectronic applications. By contrast, the laboratory that I belong to in Japan deals with fundamental chemistry such as development of new transition metal-catalyzed organic reaction, so their thinking about chemistry and methods of experiments were interesting and beneficial for me. Mr. Sung-Yu Ku, who is a student of the same age as me and came to our laboratory in Japan as a Taiwanese exchange student in June, 2006, instructed me on my research work in Taiwan. Not only he but also other many students of Prof. Wong's group helped me for my experiment and life in Taiwan. They also led me into many places, restaurants, sightseeing spots and popular places of amusement. I was able to experience the custom of Taiwan and the daily life of Taiwanese students by myself and enjoyed it. Among the Taiwanese students, most of them could speak English better than me, which stimulated my motivation to practice the communication in English.

I visited Taiwan for the first time, and I was surprised at the convenience of life in Taipei city. It was very impressive for me that Taiwanese people, not only the students, were very kind and friendly. This student exchange program let me find out some similarities and differences between Taiwan and Japan, and I felt the importance of international exchange, and the pleasure to have friends of foreigners. I'm sure that this three-week experience will be an advantage of my future life. Finally, I'd like to appreciate to all persons related to this program in both Taiwan and Japan for giving me the great opportunity.

Kyoto University – National Taiwan University Student Exchange Program



Hirofumi Hamaki

Institute for Chemical Research
Kyoto University

The Kyoto University – National Taiwan University Student Exchange Program was a good experience for me to learn the chemistry in Taiwan and also the culture of Taiwan.

I studied in the group of Prof. Tien-Yau Luh, National Taiwan University, for three weeks. Prof. Luh is very famous for his studies on fine organic synthesis and effective polymer synthesis. In Japan, I am studying on the synthesis of transition metal complexes and their applications to the synthesis of ultrahigh molecular weight polymer and copolymer. My theme in this program is the synthesis of some dithioacetals, key species for the synthesis of alternative furan-benzene oligomers and the application to the synthesis of polymers of monodispersity. During my stay, I learned how to handle bad-smelling sulfur compounds, toxic oxidation reagents and combustible reduction reagents. In addition, my linguistic ability was improved by making communications with laboratory members in English.

In the last week in Taiwan, I presented my research in Japan entitled, "Synthesis, Properties and Reduction of β-Diketiminato Complexes of Group 4 Metals" in the group meeting for about 40 minutes. Although I have attended one international conference and made a poster presentation so far, this was the first time for me to have an oral presentation in English. Although I felt uneasy about my performance, all members gave me many good questions. Especially, Prof. Luh gave me a lot of advices.

On the last day in Taiwan, Prof. Luh invited me to his home for a farewell party. I was very happy to talk a lot with Prof. Luh such as the attitude to the research. I think that this visit is very productive experience for me to change my research life.

Finally, I would like to thank all members involved in this program. I hope this exchange program will continue for many years.

カリフォルニア州立大学学生訪日プログラム

タイトル　Science, Technology and Culture in Japan
期　　間　2006 年 3 月 18 – 25 日
内　　容
　米国から 24 名の学生と 2 名の教員が京都大学を訪問し京都に 1 週間滞在した。
　午前中に京都大学にて授業を受け、午後に授業内容に関連する場所を実地見学した。
　訪問学生はカリフォルニアに帰国後、州立大学にてポスター発表を行いカリフォルニア州立大学の単位を得られるプログラムであり 19,200 ドルの予算がついていた。京都大学学生 15 名は午前の英語授業を聴講し、午後の実地見学に同行して学生間討論をおこなった。
学会参加とは異なり、両国の学生にとって長期間密着した国際交流ができた。

　以下に、このプログラムで行った内容とカリフォルニア州立大学への報告を記す。

In March 2006, twenty four students from California State University Channel Islands (CSUCI) visited Kyoto University for one week supported by the president office of CSUCI (19,200 dollars) and the office of 21COE Program Kyoto Alliance for Chemistry. The CSUCI students were taking a class entitled “Science, Technology and Culture in Japan”. One of the main objectives of the mission of CSUCI is to expose their students to international perspectives. This class was an international experience class designed to help meet that objective. It was an upper division general education requirement, which means that the class was designed for students of any major. The twenty four students included students majoring in biology, chemistry, psychology, environmental science, education, history and business.

During their visit, students visited all three campuses of Kyoto University. Guest lectures were given by Prof. Imanishi and Prof. Mori. Prof. Imanishi spoke to the students about Japanese Gardens, while Prof. Mori spoke about Earthquakes. Typically, the students from CSUCI attended morning lectures at Kyoto University. In the afternoons, they would go on a field trip, usually to a place that demonstrated or exemplified something they learned in one of the lectures. CSUCI students also got a chance to interact with students from Kyoto University. A total of fifteen students from Kyoto participated by going on field trips and socializing with their American counterparts. This was a valuable experience for both sets of students.

Field trips were coordinated by support staff at Kyoto University. They included trip to Uji, where students experienced a tea ceremony and toured the gardens and museum at Byodo-in. Students also visited the temple of Todai-ji in Nara. Prof. Imanishi took the students to see the Kyoto Botanical gardens and Kami-gamo Shrine. In Kobe, students visited the Earthquake museum. Back in Kyoto, students were able to see some of Japan’s sustainable architecture, and visited one of environmental-friendly municipal buildings, the Kyoto Aquarena at Nishi-kyogoku. Students were also able to visit the Sumitomo Steel Works (Osaka) to see how 80% of the worlds train wheels are made. Students also took a day trip to Hiroshima to visit the Peace Park Memorial and Museum, where they were hosted by Prof. Y. Nakano, a Kyoto University graduate now at Hiroshima City University.

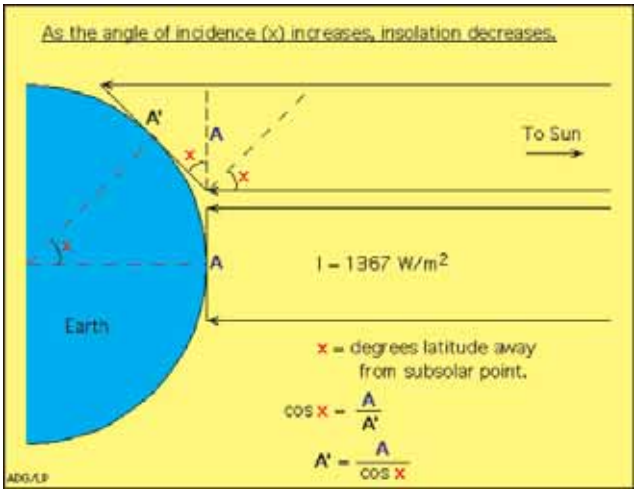
Upon return to CSUCI, students will work on a project related to the trip. Because of the diverse

background and interests of the students, there will be a wide range of projects. Each project will relate to the students interests and require independent study. Prof. Simone Aloisio (chemistry) and Prof. Amy Denton (biology) are co-teaching the course. The students will present their posters on May 5th to the CSUCI campus community. Some draft abstracts for the students' project are included, as well as some pictures from the trip.

現場見学途中での議論

宇治キャンパスでの授業教室にて集合写真

州立大学でのポスター発表例



京大での大気化学反応に関する英語授業内容