

(Report 1)

JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE (JSPS)
Report on JSPS BRIDGE Fellowship Activities
 by individual BRIDGE Fellows

1. Fellow's BRIDGE Fellowship ID															
120201															
2. Affiliated JSPS Alumni Association															
France															
3. Name in Full															
CHENEVIER				Bernard											
FAMILY				First				Middle							
4. Host Researcher															
Name in Full						Affiliation									
KITAGUCHI Hitoshi						National Institute for Materials Science									
5. Period of BRIDGE Fellowship tenure															
From		15		11		2012		To		23		12		2012	
		Day		Month		Year				Day		Month		Year	

7. Please write on the attached form.

8. Please write on the attached form.

9. Please write on the attached form.

Date: January 20th 2013

NAME (Print) : CHENEVIER

A handwritten signature in red ink, consisting of a stylized, cursive name that appears to be 'CHENEVIER'.

Signature: _____

(Notes)

1. Please send this completed form to both your host researcher and your affiliated alumni association as soon as possible after finishing your tenure under the BRIDGE Fellowship program.
2. The names and affiliations of Fellows and hosts and their reports may be given public access.

7 A -- Research network created, sustained and/or strengthened with Japanese researchers through your visit. (Please add lines if needed)

7-1) Research network created:

Formal collaborations between NIMS and MINATEC in Grenoble are being studied.

In particular the possibility of a joint research unit located on the MINATEC site is investigated. This implies exchanges of senior researchers and students between both entities.

The developments of this project should make significant progress in the first 2013 semester

Is there a possibility of the above network yielding an application for a JSPS program?

YES

If yes, please state the name of the program and researchers who may participate on both sides.

A number of scientists from both sides are interested in the initiative

7-2) Research network sustained:

Formal collaborations between NIMS and MINATEC in Grenoble

Is there a possibility of the above network yielding an application for a JSPS program?

If yes, please state the name of the program and researchers who may participate on both sides.

7-3) Research network strengthened:

Formal collaborations between NIMS and MINATEC in Grenoble

Is there a possibility of the above network yielding an application for a JSPS program?

If yes, please state the name of the program and researchers who may participate on both sides.

7. -- B --- Research network created, sustained and/or strengthened with Japanese researchers through your visit. (Please add lines if needed)

7-1) Research network created:

Formal collaborations between OIST (Okinawa Institute of Science and Technology and MINATEC in Grenoble are being studied.

The developments of this project should make significant progress in the first 2013 semester. Visits of the Institute by JC Guibert— Director of Minatec— is planned for the beginning of March.

In addition a high-level scientist from Grenoble will also visit OIST in 2013, will give a seminar. This could serve as a first step to consider a future potential position at OIST

Is there a possibility of the above network yielding an application for a JSPS program?

YES , Ph-D and P-Doc students are expected to be exchanged ; a first attempt between a newly graduated Ph-D student from LMGP (MINATEC) and Pr. Qi at OIST is already being investigated. The foreseen project is a Post-Doc stay at OIST

Other projects like "Adjunct Professors" from France at OIST are being investigated

If yes, please state the name of the program and researchers who may participate on both sides.

7-2) Research network sustained:

Is there a possibility of the above network yielding an application for a JSPS program?

If yes, please state the name of the program and researchers who may participate on both sides.

7-3) Research network strengthened:

Is there a possibility of the above network yielding an application for a JSPS program?

If yes, please state the name of the program and researchers who may participate on both sides.

7. -- C -- Research network created, sustained and/or strengthened with Japanese researchers through your visit. (Please add lines if needed)

7-1) Research network created:

Is there a possibility of the above network yielding an application for a JSPS program?

If yes, please state the name of the program and researchers who may participate on both sides.

7-2) Research network sustained:

Programs of exchanges of scientists, Ph-D, P-doc and undergraduated students between Tohoku (Pr. Nakajima), Tsukuba (Pr. Asakawa and Murakami) and Kyoto (Pr. Takano) have been scrutinized and encouragements of students from both sides (Japan and France- Grenoble University) to visit and stay at the counterpart university are being given.

Is there a possibility of the above network yielding an application for a JSPS program?

If yes, please state the name of the program and researchers who may participate on both sides.

7-3) Research network strengthened:

Programs of exchanges of scientists, Ph-D, P-doc and undergraduated students between Tohoku (Pr. Nakajima), Tsukuba (Pr. Asakawa and Murakami) and Kyoto (Pr. Takano) have been scrutinized and encouragements of students from both sides (Japan and France- Grenoble University) to visit and stay at the counterpart university are being given.

Is there a possibility of the above network yielding an application for a JSPS program?

If yes, please state the name of the program and researchers who may participate on both sides.

8. Results of your research and networking activities in Japan

Summary of the project submitted at the JSPS-BRIDGE 2012 spring call

The problems of global warming and securing energy resources are crucial challenges that the entire world is facing now. Realizing sustainable societies by advanced science and technology, obviously relies on the search for new materials. As Japan has accumulated a wealth of research and development in materials-related fields, it is the key national strategy to create a succession of new materials continually on the fundamentals of research base. In research and development on materials science, an accumulation of results based on a long-term perspective and a stable research environment are necessary. Thus, as a national effort, it was considered as extremely important to gain wide public understanding and achieve steady progress in research : these are the basic motivations for establishing WPI, a World Program Initiative.

In France those challenges are also crucially pregnant and to face them with adequate resources, recently an initiative called "Investissements d'avenir" (<http://www.enseignementsup-recherche.gouv.fr/-pid23961/investissements-davenir.html>) was launched as a national effort to boost research towards world-class excellence and also provide sufficient support to Universities to permit a very few of them to reach a high-ranking international level.

Through the JSPS BRIDGE support I am applying to, and from the present scientific relationships I have built over the last 20 years with several entities in Japan, I wish to give a **renewed and strengthened impulse** to this wealth of existing longstanding interactions. As paying great attention to the societal impact of new technologies or products resulting from long-term basic research activities is nowadays specifically crucial, **among the 3 lines of my BRIDGE proposal an innovative development is focused on the interactions between Society and Science.**

In this context I am planning to target 3 world-class research sites that are main contributors to the Japan WPI : World Program Initiative. These site activities are tightly linked to Materials Sciences, my domain of expertise and also that of LMGP :

iCeMS (Kyoto), MANA / NIMS (Tsukuba) and AIMR (Sendai)

NIMS at Tsukuba is the host Institute and Dr Kitaguchi - Superconducting Materials Center - the host researcher.

The Grenoble site is one of the most active ones in the world of nanosciences and micro-nano electronics. Strengthening interactions in the domain of Excellence (Investissement d'Avenir in France : Equip-EX et Lab-EX) in collaboration with **WPIs** in Japan would give powerful momentum along 3 lines to :

* **Basic research (+ R&D)****Objectives :**

- a - Contacting main research academic Centers on Materials Sciences of the 3 WPIs. Creating new research networks between the MINATEC / GIANT Grenoble site and AIMR site. Strengthening the present collaborations between Grenoble and Kyoto + Tsukuba sites.
- b - Contacting the CNRS Bureau in Tokyo to help the possible new relationships of a -
- c - Meet LETI / MINATEC representative at the French Embassy in Tokyo and creates new French - Japan relationships between R&D fields.

* **Education Universities - The Doctoral College of Grenoble Universities and the 3WPI-s Universities****Objectives**

Contacting the Universities of the 3 WPIs. Creating new research networks between the MINATEC / GIANT Grenoble site and AIMR site. I had recently first contacts with Tsukuba University.

Combining development efforts of ESONN (European school for young graduate students in the field of nano- sciences/technologies – Organized in Grenoble) with corresponding units in Japanese universities.

* **Society and Science Interactions****Objectives**

Innovative interdisciplinary project in close collaboration with Réseau ASIE - Imasie headed by CNRS Dr. Sabouret : 4 fields involved : Sciences, Epistemology, Litterature and Society.

Great development expected in the wake of the BRIDGE proposal results

To implement all activities of the project I foresee a single visit : 39 days from November 15th 2012

My BRIDGE stay started on November 15th (arrival in Japan) and came to an end by December 23rd. I succeeded in visiting the 3 planned sites. An additional visit at OIST (Okinawa Institute of Science and Technology) was also made. In the following sections 1 to 4 I report on the main results of these meetings and do not mention the details of all four-labs I had and scientific presentations given by a number of young scientists. In section 5, I mention additional fruitful laboratory visits not initially planned in the submitted project. Section 6 I reports on a very recent stay in Tokyo area with the main purpose of attending the "LETI-Day" workshop organized on October 3rd by the scientific service of the french embassy. Finally conclusions and recommendations are given in section 7.

NB : The "Society and Science Interactions" part of the project is a long term effort. In Japan, I started with contacts with Philippe Pons who has been correspondent at Tokyo for the newspaper "Le Monde" for over 30 years and still writes actively chronicals for it. In order to get his advise and recommendations to structure the development of such activities. Exchanges with JF Sabouret – Director of the network Asie – ImAsie (CNRS) are frequent in order to foresee possible actions in the field.

1 - Tohoku 18 - 24 November

Contacts and organisers : Pr. Yamane and Pr Ogawa

Main meetings

Pr M. Kotani - Director of AIMR ; M. Tsukada, Appointed Professor and Administrative Director

Pr. S. Ikeda - Deputy Administrative Director of AIMR

Contents : presentation of AIMR, discussion on possible exchanges between AIMR and Grenoble

I gave a presentation of the University and research organisation (MINATEC, GIANT, Campus of Innovation) in Grenoble to Tohoku university students.

Details upon ESONN and HERCULES european schools in Grenoble were also given (encouragements to Tohoku university students to participate)

ESONN : www.esonn.fr

HERCULES : www.hercules.fr

Pr. J. Kawamura : Director of IMRAM (Institute of Multidisciplinary Research for Advanced Materials- University of Tohoku)

Possible exchanges of students were considered

Pr. Goto

Expert in CVD methods for advanced functional materials synthesis - Invitation to Pr. Goto to participate in the FAME European Network (<http://www.emmi-materials.eu/>). Dead-line for 2013 application : Mid-January.

Pr. Nakajima, vice chair, division of International Education and Exchange, Tohoku University

Tohoku and Grenoble universities are already formally linked by exchanges agreements. Best ways to strengthen the exchanges were considered.

Presentation of Grenoble University and Research organisation (MINATEC, GIANT, Campus of Innovation) to students

Encouragements to students to participate in ESONN and HERCULES european schools in Grenoble

2 - Kyoto 25 November - 5 December (including Mie-ken (Tsu) and Okayama Universities)

Contact and organiser : Pr. M. Takano – Pr Takano was awarded in 2011 a support from the FAME European Network (<http://www.emmi-materials.eu/>). He achieved in October 2012 a 3 stay sequence at LMGP in Grenoble where he gave a number of seminars to scientists (for instance Midi-Minatec) and lectures to undergraduated students

Main meetings in Kyoto :

Pr Kitagawa - from february 2013 Director of iCeMS

Pr. Kitagawa gave me the main future orientations he expects to give to iCeMS.

Pr N. Sato - Director of the Institute for Chemical Research, Kyoto University

Pr. Sato presented the activities of the Institute. I made a short presentation of my JSPS-BRIDGE goals

Okayama university

Pr. J. Takada

Presentation by 2 young researchers of scientific activities on the processing of micro-tubes made synthesised by specific bacteria, of Fe oxide nanoparticles. These studies are expected to open new routes by using bacteria as nanoparticle-factories, in the synthesis of metal nanoparticles for a range of applications: water cleaning, drug delivery....

A visit was also made at a Bizen potter (J. Wells) workshop with Pr.s Takano, Takada and Y. Kusano from Kurashiki University of Science and Arts. I could understand the scientific interest in terms of physical-chemistry of the reactions at the origin of for instance the famous "Hidasuki-patterns". Such studies linked with the generic context of Science for Preservation of Cultural Heritage are also significantly developed in France with the help of Museums.

Mie-ken (Tsu-shi) university

Pr. Y. Takeda - executive vice president of Mie-ken university

Presentation of Grenoble University and Research organisation (MINATEC, GIANT, Campus of Innovation) to students

Encouragements to students to participate in ESONN and HERCULES european schools in Grenoble

Lab-tour made with Pr. N. Imanishi : material and electrochemistry research on solid batteries

3 - Tsukuba 5 - 11 December and 17 - 22 December

Contacts and organisers : Dr H. Kitaguchi, Pr. J. Nakagawa and Dr A. Doenni (from MANA)

Main meetings in Tsukuba university:

Pr Asakawa - principal coordinator and visiting professor, Tsukuba University

Pr Murakami - specially appointed professor, Tsukuba University

Pr. K. Kadowaki - JST CREST principal investigator and MANA P-I

Exchanges of students : there already contacts and exchanges of students between Grenoble University and Tsukuba University. We investigated the best way to increase them. A very good news from Tsukuba is the alignment from next autumn 2013 of the semesters on the western mode. This will facilitate considerably the arrangements in the student agendas.

I contacted my colleagues of PHELMA to review the wishes expressed this year by the students for their 2013 and 2014 internships and more particular those oriented toward Japan.

Main meetings in NIMS:

Pr. Ushioda President of NIMS

Pr Aoki, Pr. J. Nakagawa

Contents

The project of a joint research unit between Minatec and NIMS was preliminarily considered. I submitted the interest of NIMS in such consideration to Dr. JC. Guibert Director of MINATEC. Further consideration will be done at the meeting of the International scientific committee of NIMS in March 2013. JC Guibert is planning to have specific discussion about that matter with NIMS leaders.

Dr. Kitaguchi :

Content : description of the main achievements of my BRIDGE meetings and developments.

Dr. M. Kono, Dr Chykiow, Dr. Matsui

Content : preliminary ideas upon the project of a UMI (Unité Mixte Internationale - CNRS regulations) between St Gobain, NIMS and CNRS

Main meetings in MANA :

Pr. Aono -- Director - General

Pr. Bando -- Waseda University, MANA Chief Operating Officer

About Exchanges : an invitation proposal was sent by mid-January to Mana for a Professor expert in Nanofabrication who would be interested in taking part to the lectures of the ESONN school.

4 - Okinawa (OIST) 12 - 16 December

Contacts and organisers : P. Vincent Vice President - Finance and Administration ; Pr. F. Samatey P(riincipal) I(nvestigator) at OIST

Main meetings

P. Vincent : global description of the main goals of OIST initiative

Pr R. Baughmann - Provost and vice-CEO

Dr. T. Ichikawa - Scientific Senior Manager - discussion about the Business development of OIST - Start-up creations. The model of MINATEC is very interesting for OIST. That is why the visit of OIST by Dr. JC Guibert in March 2013 is very important. For OIST and for Minatec because potential development of MINATEC in joint projects may give rise to expansion in Asia from Okinawa.

Pr. F. Samatey - Associate Professor - "trans-membrane trafficking unit"

Lab-tour

Pr Y. Qi - Assistant Professor - "Energy Materials and Surface Sciences"

Lab-tour

Seminar : Presentation of Grenoble University and Research organisation (MINATEC, GIANT, Campus of Innovation)

Overall Lab-tour of the advanced energy saving buildings of OIST with P. Vincent

5 - Other meetings and discussions

LIMMS (Dr. D. Collard), director : presentation of LIMMS and meet with young researchers

CNRS Bureau in Tokyo (Pr. G. Faure, director) : discussion on potential joint Fr/J. projects.

ISAS : Institute of Space and Astronautical Science (Pr. M. Tajima, professor emeritue, professor at Meiji University, chairman of the 145 th JSPS Committee) : presentation of ISAS activities ; lab tour and tour of main installations of ISAS on the Sagami-hara campus.

Nikon / Essilor International Joint Research center in Kanagawa (Dr S. Couderc) : Dr Couderc is a former JSPS fellow and is now working at the joint research center. Undergraduated student internships are planned between Nikon / Essilor International and PHELMA (G-InP). For budgetary reasons, the first exchange will take place at the 2014 spring semester

6 - Previous stay in October 2012

LETI-Day : I attended the LETI-day organised in Tokyo by the Scientific service at the French Embassy (Dr Th. Iljic). This was a good opportunity to get in

touch with corporate staff of Japanese companies involved in the Micro-Nano electronics field.

During this stay I also met the Science advisor (Dr . Florence Riviere-Bourhis) and her team at the French embassy

7 - Conclusions of the JSPS-BRIDGE project and recommendations

a - On both counterparts Japan and France, there is obvious, very concrete and strong willingness to strengthen the relationships. In particular the financial support invested in education and research by the Japanese government is expected to find increased return in terms of exchange at the international level.

b - Several projects of new important collaborations have been initiated : NIMS - Grenoble (MINATEC) ; OIST - MINATEC for instance ; and relations between universities are being strengthened

c - Keeping close track of the situation of all former french JSPS fellows and in particular those who have positions in companies or universities in Japan is a very good asset to favour stays in Japan

d - Improving the collaborations between Universities and research centers may also significantly contribute to counterbalance the demographic dramatic decrease underway in Japan. There is thus an excellent developing context, strongly supported by the Japanese rulers to strengthen the exchanges.

e- The concept of BRIDGE is an excellent tool to maintain, sustain, strengthen and create collaborations. Of course this field-work should be kept active and "extensions within 2 years for instance" should be considered. Indeed it is important to check whether the initiated efforts have given significant results and also it is important to re-active permanently the presentations and explanations of the education and research systems. Keeping also vivid exchanges between people is of prime importance.

Acknowledgements

I wish to strongly acknowledge JSPS for the excellent JSPS BRIDGE support. This program is a very attractive and efficient initiative to strengthen relationships between research centers and universities from both Japan and France sides. The practical aspects to apply to the grant, to organise the stay and also the very warmful traditional Japanese custom in welcoming collaborators/visitors were clearly the basic ingredients that allowed me to visit so many centers and universities and gave me numerous opportunities to develop common activities.

I also thank warmly NIMS as for being the Host Institute for this stay and MANA. I thank them and all the people who helped me to have fruitful discussions with Pr. S. Ushioda, NIMS Director and Dr Aoki Director of the external collaborations division and also Pr. Aono and Bando from MANA. It was thus possible to consider potential closer interactions between NIMS and Grenoble (Minatec).

And finally I would like to express my most warmful thanks to Pr. M. Takano and Dr. H. Kitaguchi (host researcher) for their deep involvement in the stay achievement. Without their help nothing would have been made possible. Also they have welcomed me so warmly and so efficiently : I will never forget.

9. Contributions to networking between researchers in your alumni association's country and colleagues in Japan

Pr. A.-L. Dhimane (former JSPS fellow and member of the Administration board of the JSPS french Alumni association) : sending students (Jussieu) to OIST and NIMS / Tsukuba university

Student exchanges in 2014 between PHELMA (Grenoble-INP school of engineers) and Mme S. Couderc (former JSPS fellow) and program leader at the Nikon / Essilor International joint research center at Kawasaki-shi, Kanagawa.

Involvement of researchers from Grenoble section of the French alumni association (Dr. G. Feuillet CEA-LETI, Pr. E. Gheraert NEEL Institute) and NIMS colleagues in Japan (Dr. H. Kitaguchi, Dr Suzuki) in the project relating NIMS and MINATEC