

(Report 1)

FY 2010

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

1. Fellow's BRIDGE Fellowship ID <b>BR100202</b>					
2. Affiliated JSPS Alumni Association <b>FRENCH JSPS ALUMNI ASSOCIATION</b>					
3. Name in Full  <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">FAMILY <b>FATTACCIOLI</b></td> <td style="width: 15%; text-align: center;">First</td> <td style="width: 40%;"><b>Jacques</b></td> <td style="width: 20%; text-align: center;">Middle</td> </tr> </table>		FAMILY <b>FATTACCIOLI</b>	First	<b>Jacques</b>	Middle
FAMILY <b>FATTACCIOLI</b>	First	<b>Jacques</b>	Middle		
4. Host Researcher					
Name in Full <b>Ass. Pr. Beom Joon KIM</b>	Affiliation <b>Institute of Industrial Science University of Tokyo, Tokyo, Japan</b>				
5. Period of BRIDGE Fellowship tenure					
From Day <b>15</b> / Month <b>July</b> Year <b>2010</b>	To Day <b>26</b> / Month <b>August</b> Year <b>2010</b>				
6. Mailing address					
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7. Please write on the attached form.					
8. Please write on the attached form.					
9. Please write on the attached form.					

Date: August 11th, 2010NAME (Print): Jacques FATTACCIOLI


Signature: \_\_\_\_\_

(Notes)

1. Please send this completed form to both JSPS's Tokyo headquarter and your affiliated alumni association within one month after finishing your tenure under the BRIDGE Fellowship.

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

7-1) Research network created:

The final purpose of these visits and discussions is to initiate new networking activities related to my past or actual research. The scientific fields and the institutions are various, going from soft matter physics to medical imaging and from Tokyo University to the Sony Corporation. The various discussions/seminar/visits are summarized hereafter in a chronological order:

**July 21st, 2010: Discussion with Dr. H. Arata**

**URL : <http://sites.google.com/site/hideyukifarata/home>**

Dr. H. Arata was formerly a PhD student in the laboratory of Pr. Fujita at the IIS and is now hosted in the laboratory of Pr. B.J. Kim at the IIS after two years spent abroad as a postdoctoral fellow, partly in the group of Pr. Jean-Louis Viovy at the Institut Curie (Paris, 5th Arrondissement). In the framework of his research project, I attended to his scientific seminar and we discussed the technical issues of the project and we exchanged data on its experimental realization.

**July 27th, 2010 : H. Tanaka Laboratory « Physics of Soft Matter» (Institute of Industrial Science, U. Tokyo)**

**URL : [http://tanakalab.iis.u-tokyo.ac.jp/Top\\_E.html](http://tanakalab.iis.u-tokyo.ac.jp/Top_E.html)**

Pr. Tanaka is reknown in the field of colloidal science and soft-matter science and during the meeting we had together, I presented my work achieved during my PhD and my JSPS post-doctoral fellowship and we discussed about the possible theoretical understanding of some results. A part of his research is now focused on the study of liquid-liquid transitions, which are fundamental for the comprehension of the physico-chemical description of protein crystallization, which is one of the research subject I am working on.

**August 10th, 2010: K. Yoshikawa Laboratory “Spatio-Temporal Self-Organization” (Department of Physics, Kyoto University)**

**URL : <http://yklab.jp/e/>**

Pr. Yoshikawa is one of the main collaborators of our group in Paris, and as a new member, my plan was to visit his laboratory, present my research and discuss about eventual common research topics. At the beginning of the visit, I gave a seminar on my research activity (Attendance : 10 people). After that, I had the opportunity to discuss with Pr. Yoshikawa and two of his post-doctoral fellows, Dr. Yanagisawa and Dr. Sato. We also discussed to opportunity to host students of his laboratory in our laboratory in Paris for short-stays.

**August 13th, 2010 : H. Noji Laboratory « Biomolecular Energetics » (Osaka University)**

**URL : <http://www.sanken.osaka-u.ac.jp/labs/smbio/sanken/>**

Pr. Noji was formerly researcher at the Institute of Industrial Science of the U. Tokyo and works on the biophysics of molecular motors, and also on the usage of microfabrication techniques for single-molecule enzymatic studies. This last part is the most relevant for my actual research, and the discussion we had was fruitful. During this day, I had a discussion with Pr. Noji, but also Pr. Tabata and three post-doctoral fellows, Dr. Hayashi, De. Enoki and Dr. Imamura. The visit of the laboratory consisted in a tour of the different experimental setups.

**August 19th, 2010 : H. Masuda Laboratory (Tokyo Metropolitan University, Tokyo)**

**URL : <http://www.apchem.metro-u.ac.jp/labs/masuda/>**

Pr. Masuda is directed one of the two world-leading groups in the domain of the fabrication of anodized nanoporous alumina membranes. Following a part of the work I achieved during my JSPS postdoctoral fellowship in collaboration with the company Namiki, the purpose of my visit was to discuss about membrane fabrication issues, but also to propose a collaboration for the years to come in the domain of membrane emulsification.

**August 23th, 2010 : Kitamori Laboratory (Department of Chemical Engineering, U. Tokyo)**

**URL : <http://park.itec.u-tokyo.ac.jp/kitamori/>**

Pr. Kitamori is a famous scientist in the domain of microfluidics, and my former PhD advisor introduced me and advised me to visit his laboratory. Beyond the presentation of the laboratory and the available techniques, we discusses about the advantages of glass technology for microfluidics, and also about the situation of the science administration in France as compared to Japan.

**August 25th, 2010 : Life Science Laboratory, Materials Laboratories, Sony Corporation (Tokyo, Japan)**

**URL :**

The Life Science Laboratory of the Sony Corporation has a long lasting relationship with the University I used to do my undergraduate and graduate studies in Paris (ESPCI). One of their research interests are microfluidics and terahertz imaging. The LSL intend to come to visit several laboratories of the so-called Montagne Sainte Geneviève in Paris (Institut Curie, Collège de France, ENS, ESPCI, etc.) to present their research, learn about the French research in the domain of microtechnologies and try to set up collaborations. My visit to their laboratory in Tokyo intended to present the scientific landscape of the 5<sup>th</sup> arrondissement in Paris, and to define a set of laboratorie/people/institutions they would be able to visit, eventually able to lead to a more formal collaboration.

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.

**Pr. Masuda : Discussion about a JSPS-CNRS or JSPS-ANR grant**

7-2) Research network sustained:

**July 23rd, 2010 : Meeting with Pr. Pierre Dauchez (Embassy Attaché of the Science and Technology Office of the French Embassy in Tokyo)**

Following the work we did together for the organization of the Journées Scientifiques Francophones (JFR) during my stay as JSPS postdoctoral fellow (2006-2009), we discussed during our meeting of the actual situation of the ST office in Tokyo, the organization of the JFR 2010, and also of the actual politics

of the SST and the Foreign Affair Ministry for science grants.

**July 24th, 2010 : Meeting with the Administration Board of Sciencescope (Association of French Researchers in Japan)**

**URL : <http://www.sciencescope.org>**

As a former member of the association and as a former co-organizer of the Journées Francophones de la Recherche, I attended the summer meeting of the administration board of the association. Apart the discussions on the actual situation of the association, the goal of the discussion consisted in strengthening the links between Sciencescope and the French JSPS Alumni Association. In a coordinated manner, several points were discussed and decided :

- (1) the japan-wide Sciencescope mailing-list and address-book of french researchers in Japan will be used by the French JSPS Alumni members as a way of communication of eventual positions openings or grant applications in France
- (2) the websites of the French Alumni Association and Sciencescope will display their respective internet URL so the visibility of both associations will increase
- (3) the members and former-members of Sciencescope actually in France and holding a research position could join the JSPS events of presentation of the program that are held throughout France all along the year.

**July 30th, 2010: Scientific Seminar held at the IIS (U. Tokyo)**

**Title : "Functionalized Emulsions : A New Tool for Biophysics and Microtechnologies"**

Invited laboratories : CNRS LIMMS Associated Laboratories and CIRMM

Attendance : around 20 people

The purpose of the seminar was to give an overview of the research I achieved from my PhD to my postdoctoral years and also to present my present research at the ENS.

**August 25th, 2010 : Takeuchi laboratory "Biohybrid Systems Laboratory" (IIS, U. Tokyo – KAST, Kanagawa)**

**URL : <http://www.hybrid.iis.u-tokyo.ac.jp/>**

Pr. Takeuchi is member of the CIRMM and the LIMMS and the purpose of my visit was to discuss about our current research activities and results, and also meet some lab members I used to know and had scientific discussions with. We discussed also the possibility to host Pr. Takeuchi for a visit in our laboratory during the next year.

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

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

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7-3) Research network strengthened:

**From July 15th to August 26th : Stay in the B.J. Kim Laboratory (IIS, U. Tokyo)**

**URL : <http://kimlab.iis.u-tokyo.ac.jp>**

During my stay in the B.J. Kim lab, I attended a lab meeting where I could see what was going on in the actual research of the laboratory.

- The main point we discussed was related to the venue of two PhD students from the Kim lab (Park Jong Ho and Park Kyung Duck) to our laboratory in Paris at the ENS during the year 2010-2011. Thanks to a JSPS International Training Program, the two students will come for 3 months each in our group for a collaborative research purpose. During my stay I helped for the organization of their stay (accommodation, etc.).

During my postdoctoral studies, I started two informal collaborations with two French researchers of the LIMMS laboratory, whose stay in Japan ended during summer 2010. Performing experiments related to our collaboration was not possible, but we discussed about the possibility to work together in France, after they will settle down again in their new laboratories from fall 2010 :

- Discussions with **Dr. Dominique Fourmy** (LIMMS – Fujii Lab) : During my postdoctoral studies, I star
- Discussion with **Dr. S. Volz** (LIMMS – Kim Lab) :

**July 21st, 2010 : H. Fujita Laboratory (Institute of Industrial Science, U. Tokyo)**

**URL : <http://www.fujita3.iis.u-tokyo.ac.jp/>**

As a former collaborator, I went to see Pr. Fujita to discuss about my ongoing research and also about the ongoing projects in his laboratory related to our former collaboration together with Dr. Céline Bottier and Pr. Ryuji Yokokawa. During our discussion, we discussed and decided a day of visit of our laboratory in Paris. Pr. Fujita will be at the ENS on September 23d and will give a seminar to our department.

**July 22nd, 2010: T. Fujii Laboratory "Applied Microfluidics Systems" (Institute of Industrial Science, U. Tokyo)**

**URL : <http://www.microfluidics.iis.u-tokyo.ac.jp/>**

Pr. Fujii was and still is one of the two directors of the LIMMS laboratory where I used to do my postdoctoral studies. After a short presentation of my ongoing research, we talked about the Todai Forum that will be held in Paris during the year 2011 and discussed about a possible visit of Pr. Fujii during spring 2010 in our group at the ENS. We also discussed about a possible collaboration together with a French group, on a specific topic related to microfluidics.

**From August 5th to August 16th, 2010 : Visit of the iCEMS (U. Kyoto)**

**URL : <http://www.icems.kyoto-u.ac.jp>**

The Chen lab at the Institute for Integrated Cell-Material Science at the University of Kyoto can be seen as a Japanese counterpart of our lab at the ENS, since both laboratories share the same groupe leader (Yong Chen). During my stay at the iCEMS, I had the opportunity to meet many people there so that my research network with our respective laboratories are even tighter.

**06/08/2010** : Meeting with Nomurasan (Presto PD in Yong's Lab) and discussion about our respective research

**09/08/2010** : I gave a scientific seminar at the iCEMS (<http://www.icems.kyoto-u.ac.jp/rsch/smnr/2010/08/09-smnr53.html>). The attendance was close to 20 people, coming from the iCEMS and the Kotera laboratory of the University of Kyoto. The seminar was followed by a dinner with several researchers from Kotera lab and Chen lab.

**11/08/2010**: Scientific Discussion with Dr. Ken-ichiro Kamei (Assistant Professor in Chen Lab) and organization of his venue in our group (Accommodation,...) at the end of september 2010

Is there a possibility of the above network yielding an application for a JSPS program?
<b>Yes</b>
If yes, please state the name of the program and researchers who may participate on both sides.
<b>B.J. Kim : JSPS CNRS Sakura (2011 or 2012)</b>
<b>R. Yokokawa : JSPS CNRS or JSPS ANR (2011 or 2012)</b>
<b>T. Fujii : JSPS CNRS Sakura (2011 or 2012)</b>
<b>KI Kamei : JSPS CNRS Sakura or JSPS-CNRS</b>

8. Results of your research and networking activities in Japan

The purposes of my stay were :

- (i) to meet again the Japanese people I used to work with during my JSPS postdoctoral stay at the University of Tokyo
- (ii) to meet the people of the Chen lab at the iCEMS and several collaborators of my actual ENS laboratory at the University of Kyoto
- (iii) to visit and meet several laboratories I only knew by their scientific production or published work so that we could discuss about scientific collaboration
- (iv) to create industrial collaboration that could give birth to a more established collaboration between our lab in Paris and the Japanese companies

Without entering all the details written above, my stay in Japan under the JSPS Bridge Program was really active, and if no experiments were performed due to a really tight schedule, the networking activities were really numerous, as shown on the calendar below

July														August																													
W	Th	F	Sa	Su	M	Tu	W	Th	F	Sa	Su	M	Tu	W	Th	F	Sa	Su	M	Tu	W	Th	F	Sa	Su	M	Tu	W	Th														
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
IIS - Kim Lab - University of Tokyo														iCEMS - University of Kyoto												Kim Lab - University of Tokyo																	

Trip
Week-end
Meeting / Seminar / Visit

July 15th, 2010	Arrival in Tokyo
July 16th, 2010	Installation in Kim Laboratory (IIS) - Attendance to the laboratory meeting and the seminar of Dr. H. Arata
July 21st, 2010	(1) Meeting with Pr. H. Fujita (IIS, U. Tokyo) - (2) Scientific Discussion with Dr. H. Arata
July 22d, 2010	Meeting with Pr. Fujii (IIS, U. Tokyo)
July 23d, 2010	Meeting with Pr. Pierre Dauchez (Science and Technology Division, French Embassy in Tokyo)
July 24th, 2010	Meeting with the administration board of the association of french researchers in Japan (Sciencescope)
July 27th, 2010	Meeting with Pr. H. Tanaka (IIS, U. Tokyo)
July 30th, 2010	Seminar given at the IIS (U. Tokyo)
August 5th, 2010	(1) Arrival in Kyoto - (2) Installation at the iCEMS (U. Kyoto) in the laboratory of Pr. Y. Chen (ENS Paris)
August 6th, 2010	Discussion with Dr. Nomura, researcher in Y. Chen's lab at the iCEMS
August 9th, 2010	(1) Scientific seminar given at the iCEMS - (2) Visit of Pr. Kotera and Pr. Yoshikawa laboratory (U. Kyoto)
August 10th, 2010	(1) Scientific seminar given at the K. Yoshikawa laboratory - (2) Discussion with Pr. Yoshikawa and lab members
August 11th, 2010	Discussion with Pr. K. Kamei, assistant professor in Y. Chen's laboratory in iCEMS (U. Kyoto)
August 13th, 2010	Visit of the laboratory of Pr. H. Noji (U. Osaka) and discussions with some lab members
August 17th, 2010	(1) Departure from Tokyo and (2) Arrival in Tokyo in the B.J. Kim laboratory at the IIS
August 19th, 2010	Visit of the laboratory of Pr. H. Masuda (Tokyo Metropolitan University) and meeting on a future collaboration
August 23d, 2010	Visit of the laboratory of Pr. Kitamori (Department of Chemical Engineering, U. Tokyo)
August 25th, 2010	Visit of Pr. S. Takeuchi (Biohybrid Laboratory - IIS, U. Tokyo) and discussion about a possible visit in Paris
August 25th, 2010	Visit of the Life Science Laboratory of Sony Corporation in Tokyo (Medical and Dental University)
August 26th, 2010	Departure from Tokyo

Within the Created Network, at least four collaborations are possible (Tanaka, Yoshikawa, Masuda, Sony Life Science Laboratory) either on a discussion basis or through the exchange of students between our respective laboratories.

Within the Strengthened Network, the immediate results are the hosting of students from Kim Lab, the visit of Pr. Fujita and D. Kamei to our laboratory from September 2010. We can expect deeper collaboration with Kim lab and Fujii lab through the application of JSPS-CNRS or JSPS Sakura project in the next years.

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

Our group at the ENS in Paris is strongly connected to Japanese groups either at the Institute of Industrial Science of the University of Tokyo or at the University of Kyoto (iCEMS, Yoshikawa).

My contributions to networking between researchers in your alumni association's country and colleagues in Japan are

- (i) The discussion with the Sciencescope Association about the points described more precisely above (§7.1, July 24th) and the decisions that have been made with the administration board of the association
- (ii) The presentation of the scientific environment of the ENS and the 5th district of Paris during the seminars I gave to the IIS, at the iCEMS and in Yoshikawa laboratory
- (iii) The discussion I had with Pr. Fujii and a french researcher on a specific technical issue for the construction of microfluidic devices
- (iv) The help I provided to arrange the hosting and the accomodation of students from Kim laboratory and Dr. Kamei from the iCEMS
- (v) The presentation I gave at the Life Science Laboratory of Sony Corporation where I introduced the advantages to collaborate with the groups of the Montagne Sainte Geneviève in Paris (Curie, ENS, ESPCI, ENSCP, etc.). After this discussion, we are now starting to arrange their venue at the end of October 2010.