Form 7／様式 7

(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

BR 100201

2. Affiliated JSPS Alumni Association

association des anciens boursiers francophones de la JSPS

3. Name in Full

FAMILY DENOUAL First Matthieu Middle Jean-Albert Patrick

4. Host Researcher

Name in Full	Affiliation
Dr. Yoshio MITA	University of Tokyo, ISML laboratory

5. Period of BRIDGE Fellowship tenure

From	To
29 / october / 2010	19 / november / 2010
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: 03/12/2010

NAME (Print) : Matthieu DENOUAL

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:

As expressed in the application form for the JSPS-bridge program, the objective of this stay was to create a research network between the laboratory of associate professor Mita and mine. This stay was fundamental to evaluate the skill and expertise on each side. The stay allowed stressing common interest in a research subject that can only be undergone combining the expertise and knowledge of our respective laboratories. Hence a research network has been created related to that commonly defined project (detailed in section 8)
The next stage of progress of this network will be application to funding programs. This year (for 2011) no international funding program involving ANR and JST is proposed, therefore each side will apply in his respective country for funding the research work commonly defined.

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.

Application to the long-term invitation program in 2012 is considered. This application will depend on work research progress and funding of the project.

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.

8. Results of your research and networking activities in Japan

Activities during the stay had two aspects :

1- lecture, appointments and discussions with Japanese professors
2- start of a research work at the laboratory of associate professor Mita

To illustrate the first point, a schedule of the appointments is described here below :
15/11 ; 10h : appointment with Ass. Pr. Tixier-Mita, University of Tokyo, RCAST, Komaba campus
15/11 ; 16h : seminar at the university of Tokyo, IIS, Komaba campus: "Uncooled resistive bolometer toward the fundamental limits using MEMS and nanotechnologies"
17/11 : symposium/COE Ichijo Hall Hongo campus, University of Tokyo. Discussions with Pr. Fujita and Pr. Tabata of the university of Tokyo.
18/11 ; 9h : appointment with Pr. Hibara, University of Tokyo, IIS, Komaba campus
19/11 : 17h : appointment with Pr. Fuji, University of Tokyo, IIS, Komaba campus

Back in France, I have started to transmit information and contact to researcher colleagues, and hopefully initiate other collaborations.

As far as the start of a research work at the laboratory of associate professor Mita is concerned, this stay was really useful to evaluate the expertise and know-how on both sides related to the preliminarily defined research project dealing with smart-bolometers. Thanks to the skill and efficiency of the Japanese laboratory it was even possible to realize some basic prototypes during this short time -short compared to the time required for process development.

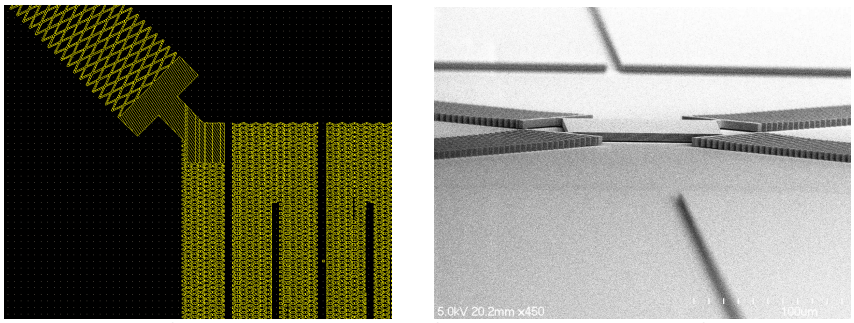
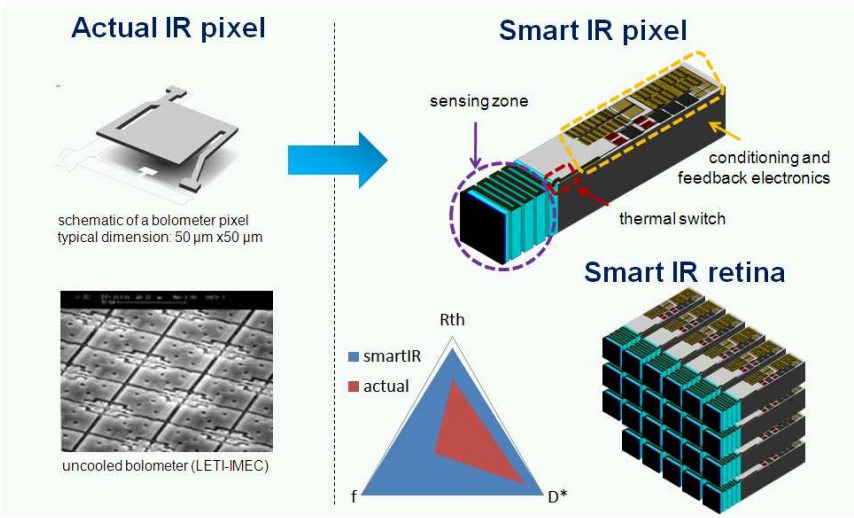


Figure 1: (left) detail of a mask designed during the first week, and (right) SEM picture of realized structure during the weeks following, using high aspect ratio microtechnology means available at the iSML laboratory

But I think the most important is that we were able within this period to define a common research project with an ambitious objective.
The last paragraph will introduce here this project.

Involving the skills of each partner the objective of this project technological breakthrough in the infrared imaging field. The commonly defined research work, entitled "smartIRretina", aims at developping a new kind of infrared sensor with performances close to the fundamental limits (2 orders of magnitude better than actual devices) and with smart extra functionalities.



The development of this project requires the expertise of both partners on one hand for high-aspect ratio micromachining and co-integration of MEMS and electronics; and on the other side for specific conditioning and feedback electronics. Combining those two expertises will allow for a technological breakthrough in the field of infrared imaging, field which is booming at the present time for security (cars, airports) and environmental applications.

Applications forms to funding programs will be undergone to sustain this research project.

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