

Project No.:18004 Core Institution in Japan: Graduate School of Engineering, Kyoto University
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**JSPS Core-to-Core Program -Strategic Research Networks-  
FY2010 Research Report**

Project No.	18004
Research Theme	Advanced Particle Handling Science
Duration of Project	2008/4/1 – 2011/3/31 (36 months)
Core Institution in Japan	Graduate School of Engineering, Kyoto University

**Implementing Organizations**

Country	Japan
Core Institution	Graduate School of Engineering, Kyoto University
Co-Chair (name and title)	Ko Higashitani, Specially Assigned Professor
Number of Cooperating Institutions	9
Cooperating Institutions	Innovative Collaboration Center, Kyoto University Graduate School of Pharmaceutical Sciences, Kyoto University Institute for Frontier Medical Science, Kyoto University Institute for Integrated Cell-Material Science, Kyoto University Doshisha University Faculty of Science and Engineering Doshisha University Graduate School of Engineering Okayama University University of Hyogo Kobe Gakuin University

Country	United Kingdom
Core Institution	Institute of Particle Science and Engineering,
Co-Chair (name and title)	Simon Biggs, Head of the institute, Professor
Number of Cooperating Institutions	0
Cooperating Institutions	
Matching Fund	EPSRC/EU/British Council & University of Leeds

Country	Australia
Core Institution	Particulate Fluids Processing Centre, The University
Co-Chair (name and title)	Geoff Stevens, Director, Professor
Number of Cooperating Institutions	0
Cooperating Institutions	
Matching Fund	Australian Mineral Science Research Fund

Country	Germany
Core Institution	Institute of Particle Technology, The Friedrich-
Co-Chair (name and title)	Wolfgang Peukert, Head of the institute, Professor
Number of Cooperating Institutions	1
Cooperating Institutions	Max Planck Institute (Mainz)
Matching Fund	Cluster of Excellence

Country	Switzerland
Core Institution	Particle Technology Laboratory
Co-Chair (name and title)	Sotiris E. Pratsinis, Director, Professor
Number of Cooperating Institutions	0
Cooperating Institutions	
Matching Fund	Exploratory Research on Advanced Materials and

## Result of Program Implementation

In FY2010, the programs of collaboration works, seminars and researchers exchanges with the partner institutes were carried out during the last year of this 5 years' project.

As for the collaboration works, there were 20 international research collaborations and 12 domestic research collaborations. The collaboration projects have been carried out in such a way that the Japanese researchers visited their partner institutions, exchanged their scientific ideas and performed the experiments with the collaborators in order to obtain the results of common interest. Most of the collaboration works are going well, and the collaborations will continue further, even after the end of this program.

As for the seminars, 6 half-day seminars were held at Japanese universities when the researchers of partner institutes and/or distinguished professors visited us. Japanese speakers were integrated into these seminars. Because this is the last year of this program, a special 3-days' seminar, called "Core-to-Core 2010 World Network Seminar on Advanced Particle Science and Technology", was held in Kyoto, to which 27 researchers from the partner institutes, including the coordinators, and 63 Japanese, including students, participated. This year, about 360 Japanese members and students in total participated in the exchange of up-to-date information.

As for the researchers exchange program, we have sent 42 researchers (total days spent abroad are 326) to the partner institutes (3 to United States of America, 7 to United Kingdom, 13 to Australia, 12 to Germany and 13 to Switzerland). Strong networks were established between individuals via the scientific meetings held at the partner institutions.

It is worth noting that young Japanese researchers took advantage of this program very actively and effectively to make their own strong international networks, which will result in world-wide research collaborations of the next generation in the field of particle science and technology.

## Achievements in FY2010 (Self Review)

The following achievements were made this year through the activities described above.

- (1) The world-wide networks for "Advanced Particle Handling Science" were strengthened among the Japanese members in this program and those members in the five foreign partner universities and their cooperating institutions. This was derived from the fact that our research network and mutual confidence with 6 institutes in 5 countries were established firmly through the "face-to-face" contacts among member researchers.
- (2) A huge amount of information on Advanced Particle Handling Science was accumulated among Japanese researchers.
- (3) 20 international and 12 domestic collaboration research projects were successfully carried out among Japanese and overseas members.
- (4) Networks between the young researchers of the next generation were further strengthened through the "Core-to-Core 2010 World Network Seminar on Advanced Particle Science and Technology" supported by this program, which was held in Kyoto as a three days' seminar.
- (5) Young Japanese researchers were tremendously trained how to debate, discuss and finally negotiate with researchers of different cultures.
- (6) Individual intimate networks of Japanese researchers with young and world-famous researchers were strengthened, which will be connected with the creative collaborations in the near future.
- (7) Out of 161 papers which were published by our members this year, 18 papers are based on the international collaborations and 58 papers were carried out with the support of this program.

### Future Plan (Measures toward Achieving Research Objectives)

The international networks among members have strengthened incredibly, because a tremendous number of mutual contacts have been carried out among the Japanese members and the members of cooperating institutions for the last 5 years of this program. Most of our members now know the researchers of our cooperating institutions in detail, and have also noticed the importance of the interdisciplinary collaborations that might bring "a great break-through" of various problems. Hence, a large number of collaboration works among the members are going on not only internationally but also domestically. This year 20 international collaborations and 12 domestic collaborations are being carried out. These mutual active contacts and networks among members will result in the development and establishment of "the Advanced Particle Handling Science for the Next Generation". Since this is the last year of this program, some of the coordinators in the partner institutes are trying to continue a somewhat similar program. This implies that the partner institutes have evaluated the importance of this program