

JSPS Core-to-Core Program
FY2006 Implementation Plan (Project No. : 16002)

Research Theme Ultrafast Intense Laser Science
Duration of Project 2006/4/1 -2009/3/31 (36 months)
Core Institution in Japan (Co-Chair) The University of Tokyo
(Prof.KaoruYAMANOUCHI)

Implementing Organizations

Japan

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|-------|---------------------------|---|------------------------------------|
| Japan | Core Institution | The University of Tokyo | |
| | Co-Chair (name and title) | Kaoru YAMANOUCHI, Professor | |
| | Cooperating Institutions | RIKEN, TITech, JAEA, Tohoku Univ., Osaka City Univ., Ritsumeikan Univ., ISSP Univ. of Tokyo, IMS, Keio Univ., Osaka Univ., NTT Basic Research Lab., Kyoto Univ., Univ. of Tsukuba | Number of Cooperating Institutions |
| | | | 13 |

Partner Countries

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|--------|---------------------------|--|------------------------------------|
| Canada | Core Institution | Laval University | |
| | Co-Chair (name and title) | See Leang CHIN, Professor (Canada Research chair of Ultrafast Intense Laser Science) | |
| | Cooperating Institutions | Univ. of Sherbrooke, NRC, INRS, Univ. of Alberta | Number of Cooperating Institutions |
| | | | 4 |

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| France | Core Institution | French Atomic Energy Commission, Saclay | |
| | Co-Chair (name and title) | Didier NORMAND, Department Head | |
| | Cooperating Institutions | LOA, CEA, Paul Sabatier Univ., CELIA | Number of Cooperating Institutions |
| | | | 4 |

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|---------|---------------------------|---|------------------------------------|
| Germany | Core Institution | Friedrich-Schiller-University Jena | |
| | Co-Chair (name and title) | Roland SAUERBREY, | |
| | Cooperating Institutions | MPI for Quantum Optics, Bielefeld Univ., MBI for Nonlinear Optics and Short Pulse Spectroscopy, MPI for Nuclear Physics, MPI for Physics of Complex Systems | Number of Cooperating Institutions |
| | | | 5 |

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|-------|---------------------------|--|---|
| Italy | Core Institution | University of Palermo | |
| | Co-Chair (name and title) | Gaetano FERRANTE, Professor | |
| | Cooperating Institutions | CNR research area Pisa, Univ. of Milano Bicocca, Univ. of Roma Tor Vergata, Univ. of Pisa, ENEA, Politechnical Univ. of Milano, CNR EURATOM-ENEA-CNR Association | Number of Cooperating Institutions 7 |

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|------|---------------------------|--|---|
| U.K. | Core Institution | University of Strathclyde | |
| | Co-Chair (name and title) | Kenneth LEDINGHAM · Professor (William Penny Professor of Laser Induced Nuclear Physics) | |
| | Cooperating Institutions | Rutherford Appleton Lab., Blackett Lab. Imperial College London, Univ. of Reading | Number of Cooperating Institutions 3 |

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|--------|---------------------------|--|---|
| U.S.A. | Core Institution | Temple University | |
| | Co-Chair (name and title) | Robert Levis · Professor | |
| | Cooperating Institutions | Temple Univ., Univ. of Maryland, Univ. of Texas at Austin, Lawrence Livermore National Lab., American Univ., Colorado School of Mines, Univ. of Central Florida, Univ. of Delaware | Number of Cooperating Institutions 8 |

Objectives of Research Exchange (including the five years after the project finishes)

Intense laser-field science is a new interdisciplinary research field, which emerged recently based on the discussion and research exchanges among the researchers in the fields of physics, chemistry, and laser engineering, stimulated largely by the recent innovative development of the ultrashort-pulsed laser technology. The counterpart countries involved in this Core-to-Core project are Canada, France, Germany, Italy, UK, and US. The member researchers of this international network will make an effort cooperatively in order to expand the frontiers of this new research field by taking advantage of their respective research expertise. It is encouraged that researchers in the younger generation will join this program actively by attending seminars and symposia as well by being involved in a joint research program with other research groups in the network.

Results to the present

According to the annual plans for the first two years, organizations of international symposia, dispatches of researchers in Japan Team overseas, and invitations of researchers from abroad have been actively made, which have triggered and promoted strongly international research exchanges and collaborations. Significant scientific achievements have been reported one after another based on these collaborations. Researcher exchanges of young researchers have also been made. In addition to these achievements, matching funds have been arranged for supporting our Core-to-Core program from the counterpart countries. It can be said that the significant achievements were made during the first two fiscal years for activating further our international cooperation for coming years. It should be noted that our Core-to-Core Program has been supported cooperatively by Center for Ultrafast Intense Laser Science that was established in February, 2005, as one of the research centers of Graduate School of Science, the University of Tokyo. For disseminating our activities internationally, the agreement was reached with Springer to start publishing anew review-style book series, "Progress in Ultrafast Intense Laser Science (PUILS)," in July 2006.

Summary of FY 2006 Exchange Plan

Joint Research

Collaborations are now in progress between Prof. Kaoru Yamanouchi (Univ. Tokyo) and Prof. See Leang Chin (Laval University) on the application of filamentation processes induced by intense laser fields, between Prof. Ohmori and Prof. Robert Levis (Temple Univ., US) on the control of chemical reactions, and between Prof. Nobuaki Nakashima (Osaka City Univ.) and Prof. Kenneth Ledingham (Univ. Strathclyde, UK) on the Coulomb explosion reactions of aromatic molecules in intense laser fields. A joint project is now being planned between Prof. Hiroaki Nishimura (Osaka University) and Dimitri Batani (Univ. Milano, Bicocca) on the energy transport and intense X-ray generation in ultrashort laser produced plasma.

Seminars

The following international gatherings are now being planned: (i) The first Japan-Canada Core-to-Core Symposium on Ultrafast Intense Laser Science (UILS) (July 7th-8th, 2006 at Tokyo; Co-chairs: K. Yamanouchi and S.L. Chin), (ii) The first COAST autumn school on ultrafast Intense laser science (Nov. 24th-26th, 2006 at Tokyo), (iii) The 5th International Symposium on Ultrafast Intense Laser Science (Nov. 28th-Dec. 2nd, 2006 at Lijiang, China; Co-chairs: R. Li, S.L.Chin, and K.Yamanouchi), and (iv) The second Japan-Canada Core-to-Core Symposium on UILS (March 5th-11th, 2007 at Quebec; Co-chairs: S.L.Chin and K.Yamanouchi).

Researcher Exchanges

For activating joint projects among the member researchers in the Core-to-Core network, exchanges of young researchers will be encouraged. Such researcher exchanges are now being planned between Prof. Yamanouchi's group and Prof. S.L.Chin's group, between Prof. Yamanouchi's group and Prof. J.-C. Kieffer's group, between Prof. Nishimura's group and Prof. Batani's group, and between Prof. Kono's group (Tohoku Univ.) and Prof. Faisal's group (Univ. Bielefeld).