

FY2012

JSPS Core-to-Core Program  
-Strategic Research Networks-  
Research Report

Project No.	20003
Research Theme	Electronics and Photonics Convergence by Si Photonics
Duration of Project	2010/4/1-2013/3/31
Core Institution in Japan	The University of Tokyo

## Implementing Organizations

Country	Japan
Core Institution	The University of Tokyo
Co-Chair (name and title)	Kazumi WADA・Professor
Number of Cooperating Institutions	6
Cooperating Institutions	Kyoto Univ., Yokohama National Univ., The University of Electro-Communications, Tohoku Univ., Okayama Univ, University of Hyogo

Country	Belgium
Core Institution	Ghent University
Co-Chair (name and title)	Roel. Baets・Professor
Number of Cooperating Institutions	8
Cooperating Institutions	University of Trento, University of Surrey, Max Planck Institute of Microstructure Physics , Universitat Stuttgart, Technische Universität Wien, University of Roma, FOM, Université Paris-Sud
Matching Fund	European Commission, Flemish Government/FP7, Methusalem

Country	U.S.A.
Core Institution	Massachusetts Institute of Technology Microphotonics Center
Co-Chair (name and title)	Lionel C. Kimerling・Professor
Number of Cooperating Institutions	8
Cooperating Institutions	Rochester University, Lehigh University, Cornell University, National Research Council Canada Institute of sciences of microstructures, Stanford University, UCLA, CALTEC, McMaster University
Matching Fund	Ferromagnetic Magneto-optical Oxides for Nonreciprocal Photonic Devices

Country	
Core Institution	
Co-Chair (name and title)	
Number of Cooperating Institutions	
Cooperating Institutions	
Matching Fund	

### Result of Program Implementation

The research goal was to implement on-chip light source and achieved at MIT, Ghent University and University of Tokyo in terms of Ge laser on Si, III-V laser on Si, and Athermalization of Light source on Si, respectively.

Networking among young researchers in these three centers has been well accomplished utilizing internet based communication technologies. This will enrich their sustainable progresses in communication and future research collaboration in various spectra and in many years.

World trend of Si photonics has been summarized and should help the research field of Si photonics applied in future.

### Achievements in FY2012 (Self Review)

The program stimulates young researchers to communicate research daily life, and they can last their network although the funding period is over.

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

Keep the inter-center collaboration active and fruitful to achieve a new era of Si photonics for real application. In Japan we should focus on telecommunication as well as computer-communication in this coming 5 years. To make significant progresses in these three centers, it is now time for young researchers to work together using the built-in networking.