

Examples of Efforts for the Creation of Regional Innovations

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) has implemented policies aiming at promoting regional science and technology through the industry-academia-government collaboration, including the one for the promotion of formation of knowledge clusters initiated from Fiscal 2002. Support provided thus far has steadily produced results, such as the creation of new technology "seeds" in regions across Japan and the commercialization of research and development results. The newly created innovations are expected to revitalize local communities in the future.

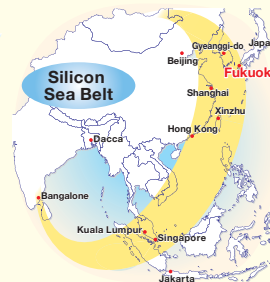
(Project period: From Fiscal 2007 to Fiscal 2011)

Fukuoka Kitakyushu Iizuka

Companies attracted to the region by the efforts to establish a world-class R&D hub of advanced system LSI

The Fukuoka, Kitakyushu and Iizuka region promotes the Regional Innovation Cluster Program aimed at establishing the world's leading center for advanced system LSI development to respond to the needs of the "Silicon Sea Belt region", where more than 70% of semiconductors produced in the world are consumed. To expand the results of research achieved by universities and other research institutions in the region, collaboration is formed with research organizations in the Silicon Sea Belt region in order to promote joint research toward the commercialization of research results. Furthermore, the region is expanding the network with other research centers in the Asian region and spurring business exchange activities through interregional exchange events such as international conferences and technical exchange meetings.

As a result of these efforts, the number of system-LSI-related companies in the region increased by more than ten times during the period from Fiscal 2000 to Fiscal 2010, to 211 companies (as of the end of June 2010).



(Project period: From Fiscal 2008 to Fiscal 2012)

Tokai Region

Advancement of international collaboration toward the establishment of a world-class manufacturing center

In accordance with the key concept, "Creating World-Leading, Environmentally-Friendly Advanced Functional Materials and Devices," research and development are being promoted in the Tokai region based mainly on advanced plasma nanotechnology science and engineering. By disseminating research results and supporting application research and prototype development, technologies are transferred to small and medium-sized companies for commercialization and industrialization. Consequently, the region produced various prototypes and products, including the ultrahigh-density atmospheric-pressure plasma equipment and material process technology that utilizes advanced plasma technology.

From Fiscal 2008, the international symposium on advanced plasma nanotechnology, "ISPlasma," is held every year in the region to actively transmit information to the world. Also promoted in the region are exchange of information and joint research with researchers and research institutions in France, Switzerland, Germany, the United States and other countries.



Ultrahigh-density atmospheric-pressure plasma equipment



ISPlasma international symposium

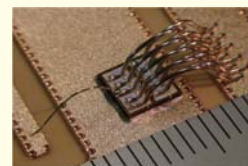
(Project period: From Fiscal 2008 to Fiscal 2012)

Kyoto and Keihanna

Development of nanotechnology-based materials aimed at solving environmental problems

By drawing on the regional advantage that the area is concentrated with highly functional materials manufacturers, the Kyoto and Keihanna which includes region addresses the development of cutting-edge nanotechnology-based materials that can help reduce environmental impact in an effort to help solve global environmental problems. For example, the joint research by Kyoto University and Rohm Co., Ltd. successfully developed a transistor (MOSFET) that uses silicon carbide (SiC), a material that was previously considered difficult to use in applications requiring large current flows. This transistor has increased the current capacity significantly from previous 100 A to 300 A.

This development has increased the possibility of low-loss SiC transistors replacing the large-current Si power transistors currently used in hybrid and electric vehicles with potential for great demand growth on a global scale in the future. Thus, it is attracting a great deal of attention worldwide as a technology that contributes to the realization of an energy-efficient society.



SiC transistor (MOSFET) chip

(Project period: From Fiscal 2008 to Fiscal 2011)

Toyama/Ishikawa

Development of a high-speed antibody search system by maximizing policies of relevant ministries

The Toyama and Ishikawa region is striving to establish a center for research and development in the field of preventive and healthcare life sciences by maximizing the accumulated diverse manufacturing functions and the collected intellectual assets in the medical, pharmaceutical and biotechnology fields.

Backed by the support provided by MEXT, the University of Toyama, Toyama Industrial Technology Center and local companies collaborated and developed a "cellular microchip" that has several hundred thousand extremely small wells, each designed to contain one human lymphatic corpuscle (cell measuring approximately 7 μm in diameter), arranged in an array, as well as a system that quickly detects target cells and a device that collects single cells. By utilizing these achievements and METI's support policies, the region has developed an "integrated cell screening system (Cell Porter)" that can perform a series of operations, including divided injection of cells into a microchip and recognition and collection of specific cell, in a single day, as compared to several months required by the conventional method.



Automatic cell collection system "Cell Porter"