

Representative Results

Fukuoka Kitakyushu Iizuka

(Fiscal Year 2007-2011)

Concentration of companies as a result of efforts to create a hub for the development of the world's most advanced system LSIs

The Fukuoka/Kitakyushu/Iizuka Region is involved in a regional innovation cluster program aimed at forming a hub for the development of the world's most advanced system LSIs for the Silicon Sea Belt region, where more than 70% of semiconductors produced worldwide are consumed. In order to achieve wide dissemination of research results conducted by local universities and other research institutions, the region actively collaborates with research institutions in the Silicon Sea Belt Region in joint research aimed at practical application. In addition, the region hosts international conferences, technological exchange meetings, and other inter-regional exchanges in order to enhance networks with other research centers in Asia, and to promote business exchange. As a result of these efforts, the number of system LSI-related companies operating in the region has surged to 192, a more than nine-fold increase between 2000 and 2009.



Tokushima

(Fiscal Year 2009-2013)

Taking advantage of activities for overcoming diabetes, on the path to realizing medical tourism

In order to resolve their high rate of death from diabetes, which is a serious local issue, Tokushima established the Clinical Research Center for Diabetes to conduct comprehensive R&D on diabetes, including its diagnosis, prevention, and treatment, and has been working to overcome the local diabetes problem based on outcomes from their research. Based on these efforts, the area initiated the advancement of medical tourism with an emphasis on scientifically-based diabetes check-ups for the rapidly-increasing population of diabetic patients across Asia, by combining exercise therapy, diet therapy using local agricultural and fishery resources, and advanced diabetes check-up menus. The promotion of such activities by the area may even lead to effective diabetes countermeasures across all Asia.



Meetings for negotiating business with travel agencies (Shanghai)

Tokai Region

(Fiscal Year 2008-2012)

International collaboration for the formation of a world-leading manufacturing center

In the Tokai Region, the promotion of R&D with advanced plasma nanoscience and engineering as its core is ongoing, in line with the concept of creating advanced functional materials and devices that are both world-leading and environmentally-friendly. Numerous prototypes and achievements have resulted, including the development of an ultra high-density atmospheric pressure plasma device and material processing technologies that utilize advanced plasma technologies. This is achieved through the advancement of technological transfers to mid-level or small- and medium-sized corporations and commercialization through the diffusion of research results, as well as the provision of support to applied research and prototype development. Moreover, organizing the annual ISPlasma (an international symposium on advanced plasma nanoscience launched in 2008) facilitates the provision of information overseas, as well as the active exchange of information and joint research, etc., with research institutions and researchers in France, Switzerland, Germany, and the USA, etc.



Super-water-repellent paper using plasma technology



ISPlasma international symposium

Western Tono Area

(Fiscal Year 2008-2010)

Creation of next-generation ceramics technologies in harmony with the environment to revitalize the regional ceramics industry

The Western Tono Area is one of Japan's most well-known pottery-producing locales, where research on pottery and ceramics flourishes. The area aims to create a new industry of environmentally-harmonious ceramics by adding a new "environmental harmony" value to conventional ceramic ware and products, and strives to improve and revitalize pottery and related industries to achieve sustainable regional growth. Consequently, the Western Tono Area has successfully developed many new products, including low-temperature-sintering porcelain ware that can be sintered at temperatures that are 300°C lower than previously possible, to achieve an almost 40% reduction in energy consumption and carbon dioxide emissions. Another invention is a high-temperature superheated steam generator that utilizes new conductive ceramics and can be used in various applications, such as the high-efficiency washing of electronic parts and detoxification of contaminated soil.



Low-temperature-sintering porcelain ware

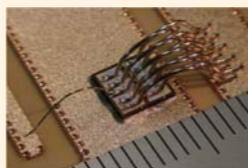
High-temperature superheated steam generator (furnace part)

Kyoto and Keihanna

(Fiscal Year 2008-2012)

Progress in the development of solutions to environmental issues utilizing nanotechnology materials as the core

The Kyoto and Keihanna Area is currently working on the development of leading-edge materials that possess the capability to reduce environmental burdens, based on nanotechnology, with the aim of resolving global environmental issues, by exploiting their regional advantage; specifically, a high concentration of corporations which manufacture advanced materials. As a result, a transistor (MOSFET) utilizing SiC (silicon carbide) has been successfully developed through joint research conducted by Kyoto University and Rohm Co., Ltd., which features a significant increase in current capacity from the conventional 100A to 300A, although conventional wisdom held that it was difficult to generate high currents. As a result, the possibility of high current SiC power transistors (used in hybrid cars, for which rapid global diffusion is expected) being replaced by lower-loss SiC transistors has increased significantly, and related technologies are attracting attention for their potential in contributing to the realization of the energy conservation era.



Transistor chips (MOSFET) that utilize SiC

Mie/Ise Bay Shore Area

(Fiscal Year 2008-2010)

Development of world's first all-solid-state polymer lithium secondary battery

The Mie/Ise Bay Shore Area has been engaged in efforts that conform to the Advanced Materials Industrial Cluster Initiative, which is the prefecture's industrial policy that aims for a concentration of industrial bases focused on advanced, functional materials. More specifically, polymer lithium secondary batteries are being developed that are thin, pliable, and feature a high degree of safety, through the utilization of solid-state polymers as electrolytes. As a result, a secondary battery prototype, using solid-state polymers that are active at a lower than room temperature, has been developed for the first time ever. This could lead to a variety of future applications that includes use as rechargeable batteries for thin displays and electronic paper.



EL lighting device powered by the successful development of secondary batteries

Hakodate Area

(Fiscal Year 2009-2013)

Commercialization of a variety of products using local resources and developed through joint R&D activities by industry, academia and government

The Hakodate Area is surrounded by ocean on three sides, and has a high concentration of fisheries and marine industries. It is also endowed with world-class marine research resources, spearheaded by Hokkaido University's Graduate School of Fisheries Sciences. The area utilizes local marine products of superb quality in advanced applications; develops value enhancement technology for special functional components as well as quality retention technology; and has successfully produced more than 100 items (cumulative sales of 3.2 billion yen) that utilize the active ingredients of Gagome kelp, all by exploiting the area's natural potential and through regional industry-academia-government collaboration. Moreover, this project promotes collaboration with East Asian countries and other Asia-Pacific nations to cultivate global commerce, so as to establish a global knowledge center that serves as a hub for overseas fisheries and marine science clusters.

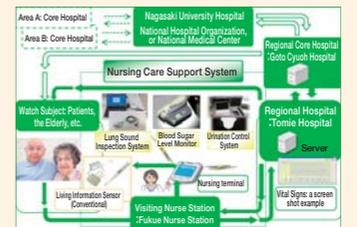


Nagasaki Area

(Fiscal Year 2008-2010)

Development of preventive medicine and home medical care system as the solution to problems on the island

The aging of the population on the fifty-five inhabited outlying islands in the Nagasaki Area is significant, while securing access to medical institutions remains difficult. To resolve this regional problem, medical/welfare professionals, municipalities, and universities, etc., are collaborating on research for the establishment of a preventive medicine and home medical care system dubbed the "Nagasaki Method." As a result, a field testing device has been produced experimentally, which utilizes the existing information network to connect biological information devices, etc., in areas with medical systems in remote areas and islands. To verify its efficacy, on-site experiments were conducted on the Goto Islands, a major set of islands in the prefecture. In the future, additional demonstrative experiments will be conducted to refine the system, with the goal of establishing continuous operations in the area.



Schematic Diagram of the Nagasaki Method