Hamamatsu Optronics Cluster

Hamamatsu (Fiscal Year 2002-2006)

Life Sciences IT Environment Nanotech/Materials

Creating a world-class center for “intelligence” and “technology” in the optronics industry, and making a foundation for new industry in the Hamamatsu area

Core Organization
Organization for Hamamatsu Technopolis

Participating Research Organizations (Bold: Core Research Organization)
Industry···Amelio Corporation, Alpine Electronics, Inc., IKEGAMI TSUSHINKI CO., LTD., OLYMPUS CORPORATION, Sanei Hytechs Co., Ltd,. SHARP Corporation, SUZUKI Motor Corporation, Digital Sensation Co., Ltd., NALTEC, Inc., Nihon Computer Co., Ltd., NOBUO Electronics Corporation, Panasonic Mobile Communications Shizuoka R&D Lab., Papa-Lab Inc., Pulstec Industrial Co., Ltd., Hitachi, Ltd., Hitachi Transport System, Ltd., FiberTech Co., Ltd. , Photron Limited, Fujinon Corporation, Brookman Lab, Inc., Yazaki Meter Co., Ltd., Yamatake Corporation, YAMAHA CORPORATION, Yokogawa Electric Corporation
Academia···**Shizuoka University, Research Institute of Electronics,** Faculty of Engineering, Faculty of Information,
Innovative Joint Research Center Hamamatsu University School of Medicine, Photon Medical Research Center, Faculty of Medicine
Government···Hamamatsu Technical Support Center

Project Overview

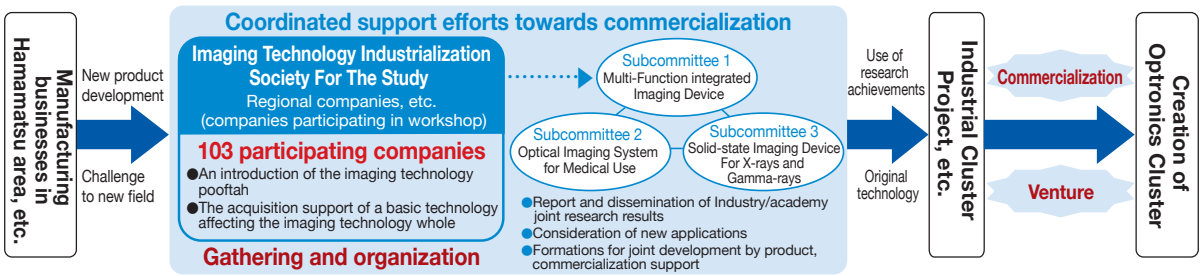
In this project, we shall develop basic technology for “User-friendly, High-quality Imaging Technology.” This will be useful for tasks like: (1) reducing physical injuries that accompany the advent of the “car-based society” and facilitating comfortable driving, (2) accurately diagnosing disease in medical fields and treating diseases with fewer complaints, and (3) ensuring safety in daily life via a sophisticated security environment.
More specifically, we are developing the following through joint research by industry, universities, and the government.

1. Multi-Function Integrated Imaging Device
   Next-generation imaging devices for industrial and medical use are successfully developed. These devices feature a wide dynamic range, and smart imaging to enable efficient acquisition of only needed image information.

2. Optical Imaging System for Medical Use
   Highly functional microscope systems and operation navigation systems have been developed to observe cells and for surgical operations that will help support future advanced medical treatments and diagnostic techniques. In addition, imaging systems are developed that can faithfully reproduce colors. Those systems have functions that are indispensable for medical diagnoses.

3. Solid-state Imaging Device for X-rays and Gamma-rays
   We developed camera devices and so forth which correspond to high energy radiation for non-destructive inspections and X-ray CT.

In addition, for targeting the establishment of an optoronics cluster, starting an “imaging technology industrialization society for the study," and organizing a subcommittee according to the theme and working group, and area original personnel training and various businesses to be able to advance by a setup, industrialization / manufacture by the development of a product project in particular; supporting the same.



Main Results

1. Commercialization of x-ray imaging devices with energy differentiation
   Thanks to joint research between Shizuoka University’s Research Institute of Electronics and Hamamatsu Photonics K.K., sales of an energy differentiation type 64ch CdTe radiation line sensor with 1 mm pitch commenced in October 2006 These sensors possess the unique ability to differentiate x-ray energies through a process known as photon counting and are expected to enjoy a wide range of applications in fields including security, nondestructive testing, and medicine.


Energy Differentiation Type 64ch CdTe Radiation Line Sensor

2. The creation of a multitude of world’s firsts and world-class achievements, and rapid commercialization
   A five-year period of research and development centering on image science at Shizuoka University and photomedicine at the Hamamatsu University School of Medicine has yielded a wide range of research achievements including a wide dynamic range image sensor, a time-of-flight range image sensor, a surgery navigation system, and a vision color image system. Two projects were adopted by the 2007 Ministry of Economy, Trade and Industry Regional Revitalization Consortium (framework linked with other ministries), two by the 2008 Ministry of Economy, Trade and Industry Research and Development Projects for Creation of Regional Innovation (for the public) and many other development support projects specialized in the formation of regional clusters based in Shizuoka Prefecture and Hamamatsu City. Commercialization by joint research enterprises and regional businesses is rapidly underway.


Wide Dynamic Range Image Sensor

3. Establishment of venture businesses originating from universities
   Digital Sensation Co., Ltd. was established in 2004 and provides services utilizing multimodal content and Internet delivery technology.
   In addition, Brookman Lab, Inc., which began as an enterprise undertaking the design of image sensors on a commission basis and is currently aiming to become a fabless (fabrication-less) venture business engaging in its own design and research, was established in 2005. Both these university-originated companies have emerged from a knowledge cluster.


Surgery navigation system