



Hamamatsu Optronics Cluster

# Hamamatsu

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

Cluster Vision

Our goal is to focus on "super-visual imaging technology" and thereby support next-generation industry and medicine. By combining the "seeds" of technology, which come primarily from regional universities, with the applied manufacturing technology and product/technology development skills that are distinctive to the area, we shall selectively promote basic and applied technology research on imaging devices and imaging systems and thereby create new businesses, new industries, and new employment in the area. We plan to: promote active participation by corporations outside the area; use deregulation to establish a zone to promote concentration of optic technology-related industries; and facilitate teamwork by researchers, research organizations, and leading companies both within and outside Japan.

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 a "car-based society" and facilitating comfortable driving, (2) accurately diagnosing disease in the medical field and treating disease 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.

Next-generation imaging devices that feature a previously unattainable wide dynamic range, and smart imaging to enable efficient acquisition of only needed image information. These devices are being developed for automobiles and other industrial applications, as well for medicine.

Highly functional microscope systems, endoscope systems, and surgical support systems to support the sophisticated medical treatment and diagnosis of the future, and imaging systems enabling faithful recreation of color, which is indispensable in medical diagnosis.

Camera devices for high-energy rays used in non-destructive inspection and X-ray

Project Director  
Yoshifumi Shibata



Yoshifumi Shibata is a former vice-chairman of the Hamamatsu Chamber of Commerce and Industry and is now the chairman of the San-En-Nanshin Vitalization Promotion Council. ("San-En-Nanshin" refers to a region covering parts of Aichi, Shizuoka, and Nagano Prefectures)

## Creating a Regional Cluster Focused on Optical Technology

In the Hamamatsu region, this project aims to create an optronics cluster with optical technology as a key technological field and has been at the center of efforts to promote a wide range of academic-industrial projects through the utilization of a strong cooperative framework involving this project, the Industrial Cluster Project, local municipalities, and universities.

Over the past five years, this project has resulted in the creation of 10 different businesses and 254 patent applications, and the initial goals of this project have largely been met. International competitiveness and research and development potential with respect to optronics-related technology have also been greatly improved.

In addition, the Imaging Technology Commercialization Workshop, created with the purpose of spreading research results to regional businesses and developing human resources, is now proud to have the participation of 103 regional businesses that are actively undertaking the creation of new technologies and industries.

We intend to utilize this potential to promote the formation of a wide area cluster through active collaboration with other regions in Japan and advanced regions overseas in addition to assembling knowledge and industry and creating a globally competitive optics-related industry and research and development base that will become the subject of worldwide attention.

Cluster Headquarters

- President.....Kazukiyo Ishimura (Chairman, Organization For Hamamatsu Technopolis)
- Project Director.....Yoshifumi Shibata
- Chief Scientist.....Takao Ando (Professor Emeritus, Shizuoka University)
- Science And Technology Coordinators...Takatoshi. Okumura, Yasutsugu Osumi, Seiichiro Hashimoto
- Science And Technology Adviser... Fumio Takada

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 Hyltechs 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

Main Results

1. Commercialization of x-ray imaging devices with energy differentiation  
As a result of 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.
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), and commercialization by joint research enterprises and regional businesses is rapidly developing.
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 performing its own design and research, was established in 2005. Both of these university-originated companies have emerged from a knowledge cluster.



Energy Differentiation Type 64ch CdTe Radiation Line Sensor



Wide Dynamic Range Image Sensor



Surgery navigation system

## Supporting Comfortable Life in the Community "Smart Imaging and Display Technology"

<Examples of industrial applications>

