



Hamamatsu Optronics Cluster

Hamamatsu

Realization of a safe, secure, comfortable, and sustainable innovative society by advanced optronics technology

Cluster Vision

The Hamamatsu Optronics Cluster Initiative intends to integrate businesses, institutes, and researchers in the field of optronics. Such integration will help foster an environment conducive to the creation of new business enterprise. At its core, this large-scale repository of art and knowledge will encompass the Greater Hamamatsu Area and incorporate the east Mikawa region extending around the City of Toyohashi in Aichi Prefecture. It will also include other advanced areas in both domestic and overseas regions.

Project Overview

[Promotion of Industry-university cooperative research achievements]

This project is promoting the materialization of the basic philosophy: Realization of a safe, secure, comfortable, and sustainable innovative society through advanced optronics technology. Our four major projects are the following:

- (1)Development of high functional imaging devices and an intellectual information process**
Alongside imaging, measuring, and communication devices for traffic handling, industrial, medical, and information processing, work is also underway on developing device applications as support technology to build a safe, secure, and comfortable world around us.
- (2)Construction of a support environment for human activity**
This work focuses on developing new devices and systems for recognition and support of human behavioral intentions or noncontact inspection by sensing human movements, stances, line of vision, and facial expressions to enhance the quality of life.
- (3)Development of an observation and fabrication support system for ultra fine objects**
Innovative nanotechnologies for detection, machining, measurement, and production of nano-sized objects are developed for medical, agricultural, bioscience, chemistry, and industry.
- (4)Development of the Hamamatsu Innovation Management Model**
To ensure the core of the opt-electronics cluster formation in the Hamamatsu area reaches a global standard, we will construct value chains by exploiting the potential in the infrastructure, or the Hamamatsu model. This management model enables a sustainable innovation system to be established in the area.

[Influence on the area of the research results]

We promote "Optronics Technology Commercialization Workshop" activity to plan and influence the local company with the research results included in the business for the first stage and the chain of new businesses based on inter-company cooperation.

[Collaboration with advanced regions in Japan and overseas]

In Japan, in addition to Itabashi Ward in the Tokyo City area, which specializes in optical and precision machining technology, we intend to promote collaboration with the eastern (Pharma Valley) and central (Food Science Hills) regions of Shizuoka Prefecture that comprise a city area business implementation region (Shizuoka Triangle Research Cluster).

Alongside these efforts, we also intend to undertake joint research with the inter-cluster collaboration with the Jena region in Germany to promote wide area, win-win collaboration.

For a globally competitive optronics cluster that will become the subject of worldwide attention

In the first stage we promoted research and development in the Hamamatsu region with a focus on "super-visual imaging technology"; in the second stage, in order to create a "globally competitive optronics cluster that will be the subject of worldwide attention," we intend to turn our attention to the entire field of optronics and promote further advancements in optronics technology. Core research institutions include Shizuoka University and the Hamamatsu University School of Medicine as well as the Toyohashi University of Technology, which has recently begun to participate in this project. These institutions will be responsible for the creation of new innovations through the utilization of an amalgamation of imaging and sensing technologies.

In addition, we aim to gather, coordinate, and meld research seeds from both within Japan and overseas to produce a world class cluster of technology, human resources, and businesses. Furthermore, in order to foster innovations in a sustainable manner and promote the vitalization of regional industries, we intend to establish a distinctive management system utilizing the special features of the Hamamatsu region in what could also be called the "Hamamatsu model."

The above efforts will result in the creation of new enterprises through the matching of research seeds from regional universities with the needs of regional businesses, help sustain a "knowledge cycle" that will produce new research seeds, and bring about the realization of a truly independent cluster involving the regional gathering of optics-related technologies and businesses.

Project Director
Kimiyuki Nakamura



Because Kimiyuki Nakamura is the former Director of Yamaha Motor Co., Ltd., with long experience of overseas service, international judgment.

Cluster Headquarters

- President.....Kazukiyo Ishimura
(Chairman, Organization For Hamamatsu Technopolis)
- Project Director.....Kimiyuki Nakamura
- Chief Scientist.....Seichi Okamura
- Assistant Project Director... Takatoshi Okumura, Kazuhisa Nakano
- Science and Technology Coordinator... Takatoshi Okumura(additional post),
Yasutsugu Osumi, Fumio Takada,
Toshiharu Hoshi, Kenichi Hashiudo,
Kenji Kawamura, Toshiaki Kawai
- Science and Technology Adviser... Takao Ando
- Adviser.....Yoshifumi Shibata

Core Organization

Organization for Hamamatsu Technopolis

Participating Research Organizations (Bold: Core Research Organization)

Industry... IHI Corporation, Aisin Seiki Co.,Ltd., Adtech Sensing Research Inc., Advance Food Tech Co.,Ltd., APCO Ltd., Altech Co.,Ltd., ALPHA PROJECT Co., LTD., FDK Corporation, Olympus Corporation, Accelerator engineering corporation, Kyoisha Chemical Co.,Ltd., Commercial Resource,Ltd., Sanei HytechsCo.,Ltd. JFE Steel Corporation, SHARP Corporation, Juki Corporation, Sumitomo Electric Industries Ltd., Senjo Seiki,Inc., Soft Works Co.Ltd., Techno System Inc., Denso Corporation, UT Research Institute, Toyoko Kagaku Co.,Ltd., Toyota Central R&D Labs Inc., nac Image Technology, Inc., Nippon Chemi-Con Corporation, Papa-Lab Inc., Hamamatsu Photonics K.K., Brookman Technology, Inc., Holy-mine Inc., Honda Electronics Co.,Ltd., Mitsubishi Chemical Group Science and Technology Research Center Inc., Uniopt Corporation Ltd.,

Academia... **Shizuoka University, Toyohashi University of Technology, Hamamatsu University School of Medicine**, The University of Tokyo, Chubu University, Electro-Communication University, The University of Electro-Communications Osaka, Tohoku Institute of Technology, Nagoya University, Nagoya institute of Technology, Niigata University, Delft University of Technology, Carnegie Mellon University,

Government... National Institute of Information and Communications Technology, International Superconductivity Technology Center, Mie Prefecture Livestock Research Institute, Mie Prefecture Fisheries Research Institute,

Main Results

By fixing our sights on "Research and Development for Super-visual Imaging Technology to Support Next-Generation Industries" and cutting edge technology at universities to promote research and development work in 3 areas with the "smart imaging and display technology" concept for sustaining a pleasant society of the future. Results from these efforts include the startup of 20 project operations and 254 patent applications (72 of which overseas), etc. Regional companies are currently making rapid progress in commercializing and creating products.

- 1. Multi-Function Integrated Imaging Device**
A new type next-generation multi-function imaging device has been successfully developed, acquiring critical image information such as a wide dynamic range, high-speed image capture, and distance imaging, etc.
- 2. Optical Imaging System for Medical Use**
Highly functional microscope 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 vital 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.

