Life Sciences IT Environment Nanotech/Materials

Hamamatsu Optronics Cluster

Hamamatsu

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

Cluster Vision

Centering on the Hamamatsu region, we intend to collaborate with both domestic and international advanced regions including the Higashimikawa region in Aichi Prefecture, and Toyohashi City in particular, and through world-class research and development and the fostering of regional businesses, we aim to establish a wide area industry-academia-government collaborative system that continues to create chain innovations and create a globally recognized optics-related industry and research and development base.

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 highly functional imaging devices and intellectual information processors

It is important to establish technology that will enable people to view and record images any place and at any time. This kind of technology will play a pivotal role in the achievement of a safe, secure and comfortable society. We will develop image and related sensors. A wide range of applications is expected for sensors that possess extremely high visualization performance. These sensors include ultra-low noise, ultra-high sensitivity imaging devices, time correlation image sensors, wide wavelength band, super high-speed magneto-optic spatial light modulators (MOSLM), and single electron devices. We are aiming to develop innovative vehicle surveillance cameras, cameras to receive road-to-vehicle and vehicle-to-vehicle optical information communications, visual recognition sensors for robots, quality inspection devices in manufacturing fields, biotechnological life science imaging devices, image distribution and image advertising systems, information retrieval systems, quantum information communication systems, PET systems, and super low-power consumption LSIs.

(2) Development of an environment to support human activity

It is important to sense human behaviors, posture, eyes, expressions, and internal body to recognize and support their actions and to make non-contact examinations. This is because they enable us to achieve our lives as well as to improve the quality of our lives. We aim at a technological innovation in the fields of environmental control and management, large-area disaster relief, intelligent surveillance cameras, ITS vehicle cameras, marketing research for commercial facilities, dangerous goods inspection, defect detection of large-scale buildings, foreign object detection, color irregularity inspection in printing and painting, quality inspection for foods and industrial products, biological imaging, and environmental monitoring.

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)

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.

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 Coordinator…Takatoshi. Okumura, Yasutsugu Osumi, Seiichiro Hashimoto, Fumio Takada, Toshiharu Hoshi
○SCIENCE and Technology Adviser…Seichi Okamura, Kimiyuki Nakamura

Core Organization

Organization for Hamamatsu Technopolis

Participating Research Organizations (Bold: Core Research Organization)

Industry…IHI Corporation, Aisin Seiki Co., Ltd., ASTI Corporation, Alpha Project Co., Ltd., Arrow 7 Co., Ltd., FDK Corporation, Sanei Hytechs Co., Ltd., JUKI CORPORATION, Stanley Electric Co., Ltd., Sumitomo Electric Industries Ltd., Senjo Seiki, Inc., Techno System Inc., UT Research Institute, Toyota Central R&D Labs Inc., Papa-Lab Inc., Hamamatsu Photonics K.K., Brookman Lab Inc., Holy-mine Inc., Mitsubishi Chemical Group Science and Technology Research Center Inc., Yamaha Corporation, Uniopt Corporation Ltd., Renesas Solutions Corp., Roland DG Corporation

Academia…**Shizuoka University, Toyohashi University of Technology, Hamamatsu University School of Medicine,** The University of Tokyo, Chubu University, The University of Electro-Communications, Osaka Electro-Communication University, Tokai University, Nagoya University, Nagoya institute of Technology, Niigata University, Future University-Hakodate, Swiss Federal Institute of Technology, Carnegie Mellon University

Government…National Institute of Advanced Industrial Science and Technology (AIST), National Institute of Information and Communications Technology (NICT)

(3) Development of an ultra-high precision manufacturing and observation system

In order to further consolidate the accumulation of industries that forms the backbone of our manufacturing city, we will develop manufacturing technology support systems through improvements in nanotechnology. We aim to develop innovative technology and equipment such as real-time nano-order optical microscopes and UV radiation sources of ultra-high-output panel types, ultra-precision machining and correction of electron devices and MEMS, defect inspection of semiconductor devices, functional analysis from molecules to cells and internal organs, micro or nanosurgery, light sources for sterilization, and cytotechnology of living bodies.

(4) Development of a Hamamatsu innovation management model

We aim to develop an innovation management system, which can also be called the “Hamamatsu model”, in order to realize a globally competitive optronics cluster in this region that will lead to the sustainable development and independence of this cluster through the sequential creation of innovative technologies and products resulting from research and development, and the creation and fostering of venture companies.

【Collaboration with advanced regions in Japan and overseas】

In Japan, in addition to the Shinshu region (Nagano Prefecture) and Itabashi Ward in Tokyo City, areas which specialize 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).

In conjunction with these efforts, we also intend to undertake joint research with the Swiss Federal Institute of Technology and Carnegie Mellon University, which possess world-class imaging and sensing technology, as well as inter-cluster collaboration with the Jena region in Germany in order to promote wide area, win-win collaboration.