



Toyohashi Area

Development of Smart Sensing System

SCIENCE CREATE Co., Ltd.
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Core Research Organization

Toyohashi University of Technology

Major Participating Research Organizations
 Industry...Advance Food Technology Co., Ltd., AlphaProject Co., Ltd., JAPAN OPERATOR CO.,LTD. and other 17 organizations
 Academia...Toyohashi University of Technology
 Government...National Food Research Institute

Typical result of City Area Program

1. "Superconduction type high sensitivity metal detector"

Developer: ADVANCE FOOD TECHNOLOGY CO., LTD.
 Prof. Saburo Tanaka of Toyohashi, Toyohashi University of Technology

This product is a device that can surely detect the magnetic metal foreign object of 100 micron orders. The function is not affected at all by the shape of target objects (convex/concave on the surface, size), properties (moisture, salinity, and concentration, etc.), and packaging materials (aluminum and resin or glass etc.) As any complicated adjustment or errors are little, it is very reliable. It is appropriate for a wide range of raw materials and products such as packaging and pharmaceutical related.



Superconduction type high sensitivity metal detector

2. "Compact surface analysis system"

Developer: Alpha Project Co., Ltd.,
 Hironaga Uchida, Associate professor, Toyohashi University of Technology

This product is a compact and high performance scanning tunneling microscope (STM) that can be used for observation of atoms and molecules on material surfaces in the atmosphere. Size of the compact STM is 74 mm in diameter and 98 mm in height. Scanning range is 0-600nm in X and Y directions, 0-1200 nm in Z direction. The STM controller is in size of 180 in height, 360 in width and 230mm in depth. It uses the digital control method with scanning rate 6-600 sec/frame for 512~512 pixels. Scanning tunneling spectroscopy (STS) and measurement of external signal synchronized with scanning can be performed.



Compact surface analysis system

About the approach after the project

In order to expand the achievement of the project "Development of Smart Sensing System" in the previous cityarea program of basic stage and to create new field for further development, we are now accelerating the evolution of (1) development and application of smart sensing system for supporting industry and (2) development and application of smart sensing system for combining IT and agriculture. While the achievement in the previous cityarea program comes from production, communication and measurement technologies, the present cityarea program of development stage as conducted is expected to be more beneficial to local area as it would be giving the basis of application in the future for the industrial products and emerging a new market. Subproject (2) is focused to agricultural business in local area. Through new products or new technological development, our new technology will be expected to contribute to a new type of agricultural business in the near future, so-called "Precision agriculture by IT" in the 21st century.

