

Developing creative, internationally competitive smart devices, and products which use them

Overview

This program aims to jointly develop new technology, new products and new projects, combining Shinshu University and development businesses inside our prefecture. In other words, we are using technology from Shinshu University to create hyper-fine high-performance devices and groups of products that utilize them. Through these activities, we aim to improve the competitiveness of already-existing industries, increase employment (or job opportunities) and create new businesses.

Cluster Headquarters

- **President** Hachiro Kaneko (CEO of Technological Foundation of Nagano Prefecture)
- **Project Director** Masayuki Akiyama
- **Chief Scientist (CS)** Hirofusa Shirai (Trustee and Professor, Faculty of Textile Science and Technology, Shinshu University)
- **Deputy Chief Scientist (CS)** Akio Nomura (Trustee and Dean, Faculty of Engineering, Shinshu University)
- **Science and Technology Coordinators** Shingo Morimoto, Professional Engineer (Chemical Section)
Juichi Kubo, Ph.D.

Core Organization

Technological Foundation of Nagano Prefecture

Participating Research Organizations

(Bold: Core Research Organization)

Industry···Algol Corporation, S.N.Seiki Co.,Ltd., Engineeringssystem.Co.,Ltd., Orion Machinery Co.,Ltd., KOA Corporation, Sun Industry Co.,Ltd., Shinano Kenshi Co.,Ltd., Seiko Epson Corporation, Ceratec Japan Co.Ltd., Tamagawa Seiki Co.Ltd., Chinontec Industries Inc., Tsukada Riken Industry Co.,Ltd., Tokai Rubber Industries Co.,Ltd., Totoku Electric Co.,Ltd., Nagano Keiki Co.,Ltd., Nagano Japan Radio Co.,Ltd., Nichicon Corporation, Nissei Plastic Industrial Co.,Ltd., Nippon Soda Co.,Ltd., Hioki E.E. Corporation, Fujimori Kogyo Co.,Ltd., Heat-Sink & O.S. Co.,Ltd, Hodogaya Chemical Industry Co.,Ltd, M kuni Kogyo Co.,Ltd., Misuzu Industries Corporation, Miyasaka Rubber Co.,Ltd., Miyota Co.,Ltd. (in the Japanese syllabary order)

Academia···**Shinshu University**, Yamagata University, Nagano National College of Technology

Government···Industrial Research Institute of Nagano Prefecture,
Precision Technology Research Institute of Nagano Prefecture,
Information Technology Research Institute of Nagano Prefecture,
Food Technology Research Institute of Nagano Prefecture

Non-profit corporation···Institute of Research and Innovation



Project Director

Masayuki Akiyama

Smart Devices and Industry-Academia Cooperation in Nagano

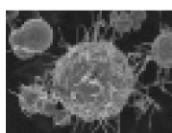
70% Nagano Prefecture's of manufactured product output is industrial products, and 60% of that is devices (parts, modules, etc.). The mission of this Cluster Project is to create a jump in market competitiveness and new products/new business since carbon-nanotech is used in these devices.

Results up to this point: 78 patents; 2 new university-launched venture companies; 6 products expected to be commercialized.

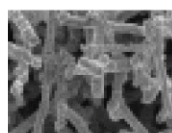
Listing the new products, we have (1) Copper ball compounded of CNF(Carbon Nano Fiber)s, (2) CNF functional plating, (3) Molds for highly heat resistant glass, (4) Nano-print laser holding container using mechanical processing technology, (5) Technological development of market competitive organic LED elements (investment: 1/10, cost: 1/2), etc .

There are many small- and medium-sized enterprises in Nagano Prefecture, and the transfer of manufacturing abroad is increasing, but there are many professionals who are re-thinking just how manufacturing there should be in Nagano.

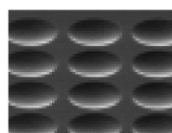
Organically combining the latent abilities of industry and academia, we make an environment that produces a synergistic effect, thus fruits of our study and projects are increasing.



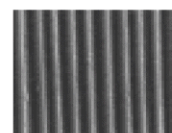
1) Copper ball compounded of CNFs



2) CNF Functional Plating



3) Molds for highly heat resistant glass



4) Nano-print laser holding container using mechanical processing technology



5) Technological development of market competitive organic LED elements

CNF: carbon nanofiber

Masayuki Akiyama is a former trustee & director general of Production Technology Development Headquarters at Seiko Epson Corp. He is highly experienced in creating and setting up enterprises, or serving as leaders of industry-academia-government projects.

Outline of the Joint Research by Industry, Academia and Government

Shinshu University, public research institutions and developing industries in the prefecture participate, plan the creation of smart devices that make use of endo-fibers or functional high-polymers, and advance activity in new product undertaking and commercialization.

● R&D on smart functional devices using nano carbon composites.

With endo-fibers and CNT (carbon nanotube) new composite materials we are developing compound modules, devices that have superior characteristics such as thermal capacity, mechanical special properties, precision processability, abrasion-resistance, etc., with the Faculty of Engineering, Shinshu University.

● R&D on organic nanomaterial devices using functional nano high-polymer materials

We are advancing R&D of organic semiconductor lasers, organic LED element technology development with functional nano high-polymer materials as the core, and applied product development with the Faculty of Textile Science and Technology, Shinshu University.

