

Development Stage

(Fiscal Year 2006-2008)

Fukui Central Area

Secure and Safe Energy Device Created with Nano-plating

Fukui Industrial Support Center

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Major Participating Research Organizations

- Industry...KIYOKAWA Plating Industry Co., Ltd.,
Kuramo Electric Co., LTD., SAKAI OVEX CO., LTD.,
Sanei Electric Co., Ltd., SEIREN Co.,Ltd.,
Tanaka Chemical Corporation, NICCA CHEMICAL CO.,LTD.,
FUKUSHIN KOGYO Co., Ltd.
- Academia...University of Fukui
- Government...Industrial Technology Center of Fukui Prefecture,
Wakasawan Energy Research Center,
Japan Atomic Energy Agency



Project Promotion

- Project Director.....Tamotsu Tanaka
(President, Tanaka Chemical Corporation)
- Chief Scientist.....Masayuki Takashima
(Director, Cooperative Research Center, University of Fukui)
- Science and Technology Coordinator...Nobuo Tatsumi (from May to December)
Takaaki Demizu
Osamu Uesaka (from December)

Core Research Organizations

University of Fukui, Industrial Technology Center of Fukui Prefecture

Aim of research and development

Nano-plating technology that is a basic technology of Fukui Prefecture, which is applied to construction of the sustainable society. To develop the secondary battery having a large capacity and high reliability, solar cell with high efficiency and new far-IR gyrotron equipped with the low loss waveguide line, the fine materials with unique hybrid surface are produced by using nano-plating technology. New hybrid materials for carbon fiber reinforced light metal alloy and high tension wire are also developed. Commercializing these new materials developed is promoted concerning to the key word of "secure, safe and reliable"

Contents of research

1. Development of the materials for lithium ion battery with large-capacity and high-reliability
New cathode material for the highly safe large size lithium ion battery for electric vehicle with capacity of 180mAhg-1 is being developed.
2. Nano-plated carbon fiber reinforced aluminum alloy which is available for press-forming
The new nano-plated carbon fiber reinforced Al alloy material having malleability and ductility is designed and prepared. The malleable and ductile carbon fiber reinforced Al alloy is applied to the material for the package of the large size lithium ion battery assembly using for electric vehicle.
3. Portable power source equipped with the tandem solar cell having high efficiency.
The tandem solar cell having high efficiency is developed as a light energy conversion devices. Using this tandem solar cell, the new portable power source for a laptop computer and the devices for disasters preparation such as a flashlight, a radio and a radiophone is developed.
4. Light weight high tensile cable fabricated with the copper plated aromatic polyamide fiber.
The supercritical CO2 is applied to preparation of the copper plated aromatic polyamide (aramido) fiber having high tension and high electric conductivity. The electric cable fabricated with the copper plated aramido fiber is utilized as the cable for the robot arm.

5. Development of the terahertz device and their application to prepare the new material for the nuclear power system

New heating system to prepare the B4C for the control rod in the nuclear reactor is established by using electromagnetic wave emitted from 300 GHz gyrotron. The preparation technique of a wave guide tube with fine corrugations for 300 GHz band is applied to development of the devices in terahertz band. The ultra low loss wave guide for terahertz electromagnetic wave is prepared and is applied to the horn type high sensitive antenna in the terahertz region.

