Research and Development

We are advancing a wide range of environment-related R&D, including technologies to reduce the environmental burden of product manufacturing, environmentally friendly products, and ubiquitous networking solutions.

Fujitsu Laboratories' Involvement

Fujitsu Laboratories Ltd. is fully aware of the essential need to pursue research and development efforts on technologies that meet environmental needs. This ongoing commitment dates from the company's foundation, and advanced research into environmental themes is proceeding.

Recently, the broad scope of these R&D efforts has included technologies that reduce the environmental burden imposed when products are manufactured, technologies that address environmental issues when customers use our products, and a variety of technological solutions that will support environmental considerations in the era of ubiquitous networking.

Some Important R&D Successes

- Concentrated fuel for the long-term operation of micro fuel cells
- Development of bio-based plastics
- Development of a photocatalyst, titanium apatite
- Technology for recycling magnesium alloys
- Technology for recycling of glass-fiber reinforced polycarbonate (see P48)
- Technology for evaluating environmental burden

Some Examples of Recent Research Achievements TOPICS

Development of High-capacity Micro Fuel Cells Applicable to Concentrated Methanol Solutions

Micro fuel cells are similar to batteries in terms of energy transformation, but they utilize externally supplied fuel, and hence electrical recharging is unnecessary. They have attracted much attention as a portable energy source due to advantages that include: high energy density compared to conventional lithium ion batteries, cheap and easy means to generate electricity continuously by simple refueling anywhere and anytime, especially when there is no accessible power line, and lower environmental impact compared to conventional fossil fuels and primary batteries.

Fujitsu Laboratories has successfully developed materials technology to realize low methanol crossover (MCO) Membrane Electrode Assembly (MEA) for micro fuel cells. This enables the direct use of 30% methanol in passive fuel cell systems, providing higher power capacity. Fujitsu has developed prototype micro fuel cell modules for mobile phones and notebook PCs by applying this technology.

LCA studies shown that micro fuel cells generate only one third the CO_2 of conventional dry cells. Considering the possibility that methanol can be derived from biomass materials, we will further improve our micro fuel cell system to spread its commercialization and application in environmentally friendly electronic products.

Prototype PC fuel cell

Prototype mobile phone fuel cell (developed in cooperation with NTT DoCoMo)

Large, Bio-based Plastic Housing for Notebook PCs

Fujitsu's FMV-BIBLO NB80K notebook PC, a new model announced in spring 2005 was the first in the world to use environmentally friendly bio-based plastic for its housing.

The new material was jointly developed by Fujitsu Limited, Fujitsu Laboratories Ltd. and Toray Industries, Inc. The bio-based content is about 50% (polylactic acid primarily from corn starch), which reduces the usage of petrochemical resources. When used for the notebook PC housing, it results in 15% less CO_2 emissions than conventional petrochemical plastics.

We were also the first to introduce the use of bio-based plastics for some of the embossed tape used in packing materials for LSI devices, and from February 2005, the changeover to bio-based plastics for this application is complete.

The FMV-BIBLO NB80K PC

Development of Titanium Apatite Photocatalyst

Photocatalysts use the clean energy of light to break down organic substances (including dirt, odors and microorganisms) into water and CO_2. Fujitsu Laboratories Ltd., working with the University of Tokyo's Research Center for Advanced Science Technology, has developed a titanium apatite photocatalyst that is twice as active as previous titanium oxide catalysts in decomposing these substances.

The new catalyst combines adsorptive and antibacterial properties with its ability to decompose organic substances, and because it is made from hydroxy-apatite (calcium phosphide), a natural constituent of human teeth and bone, it is harmless to people and the environment. Experiments have established that it can also be successfully blended with plastics to create plastics that possess photochemical catalytic properties. We are committed to expanding the range of applications of this new catalyst, applying it to the housings of various kinds of IT equipment.

A prototype PC using plastic with a photocatalyst additive