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## **Chemical Technologies Awarded for Efforts to Support Future 45<sup>th</sup> Annual JCIA Technology Award Winners Announced**

Japan Chemical Industry Association

The Japan Chemical Industry Association (JCIA, Chairman: Kyohei Takahashi, Chairman of Showa Denko K.K.) has announced the winners of its 45<sup>th</sup> Annual Technology Awards.

The JCIA Technology Award, which commends companies that have developed technologies that contribute to the development of chemical industry and the economy, presents awards in the following categories: Grand Prize, Special Technology Prize, and Environmental Technology Prize. From this year's seven nominees, JCIA's Technology Committee selected the following three winners:

**Grand Prize** (For contributing to the progress of scientific technology by enhancing an original technology to therefore establish a highly industrial technology)

**Mitsubishi Chemical Corporation**

**“Development and Industrialization of Innovative Catalysis Process to Manufacture Ethylene Glycol”**

The production method of ethylene glycol, known as the main raw material for polyether products and others, had been through reaction of hydration to raise the selectivity of ethylene glycol in which large amounts of water was added to ethylene oxide for reaction. As a result, the selectivity remained at 89% at the maximum and it required a huge amount of energy in the process to remove excess water. The awarded technology, on the other hand, produces ethylene carbonate by reacting ethylene oxide and carbon dioxide and then transforming the produced ethylene carbonate to ethylene glycol by reacting with water by utilizing catalysis. With this method, over 99% selectivity can be obtained even with smaller amounts of water. In comparison with the traditional process, since a smaller amount of ethylene oxide is needed to produce the same volume of ethylene glycol and since it can be transformed with less of water, the process to remove water has become simplified. As a result, it has become possible to reduce the construction cost of the plant by over 20% and the cost of necessary energy use by 5–10%. This technology has been adopted in Korea, Saudi Arabia, and

Singapore and since it has already been operated as a commercial plant, it contributes reductions in cost, energy use, and burdens on the environment.

**Special Technology Prize** (For contributing to the progress of scientific technology with an original or improved technology)

**Mitsubishi Rayon Co., Ltd.**

**“Development and Industrialization of ‘Genopal’, High-precision Fiber-type DNA Chip”**

A DNA chip is a device used to examine the existence of genes with a certain base sequence and its volume by utilizing the hybridization reaction of four kinds of nucleobases. Although it had been used for basic research uses mainly in global analysis of genes, it has now been developed for such industrial use as support for innovative drug development and diagnostic assays. While the mainstream of the traditional DNA chips were those with two-dimensional array of DNA probes on a flat surface such as glass and semiconductor substrate, Mitsubishi Rayon has succeeded in developing an original production technology to fill the gel that supports the DNA probe into the hollow part of the three-dimensional hollow fiber sequences, thereby obtaining chips by vertically slicing toward fiber axis. It has made it possible to mass produce DNA chips of same quality and stability that analyzes several tens to hundreds of certain genes with high precision. By leveraging the features of accuracy in the data analysis process of fiber-type DNA chips and energy saving, they are contributing to the development of such research support areas as basic research and food functionality assessment. In the future, it is expected that they can significantly contribute to the development of customized medicines and other technologies.

**Environmental Technology Prize** (For contributing to the progress of scientific technology with outstanding efforts to reduce environmental burdens through an original or improved technology)

**Kao Corporation**

**“Development of Ultra-concentrated Liquid Detergent for Clothes ‘Attack Neo’”**

In recent years, such issues as global warming and depletion of drinking water resources have become serious, and interest in environmental issues has been increasing worldwide. It was evaluated that the development and launch of the detergent for clothes “Attack Neo” and a proposal for a “new style of washing” for both consumers and the manufacturer can reduce the burden on the global environment by making the number of rinsing to one have brought about a significant change in the

industry. The proposal has shifted the viewpoint from the reduction of environmental burden of the detergent product to the reduction of the volume of CO<sub>2</sub> from the whole process of washing, while also considering the needs of consumers in washing laundry. Together with ultra-concentration technology, the development of a non-ionic surfactant which results in low-absorption in fibers as well as environmental-burden reducing technology at the time of use has made the product easier to use and more compact while saving water, electricity and reducing the time of the rising cycle. The product results in high-powered cleansing, high convenience and a reduction of the volume of CO<sub>2</sub> emissions by 21% for washing. In the Japanese market for clothing detergent, it has expanded a new market for water-saving, electricity-saving products and as consumers grow their environmental consciousness, the product contributes to the reduction of our environmental burden.

The awards ceremony will be held in Tokyo on May 29, when the 22<sup>nd</sup> General Assembly of JCIA will be held.