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MMC Activities

Research Subjects for the 9th Micromachine Technology Research Grants

Subjects for the 9th Micromachine Technology Research Grants for FY 2001 were determined at the board of directors meeting held in March 2002. As a result of a rigorous examination process, three new research subjects and six ongoing research subjects in their second year were selected from a large number of applications. A total of ¥ 10.6 million in financial assistance grants will be presented.

The research grant program was started in FY 1993 as an independent activity of the Micromachine Center intended to provide financial assistance to researchers engaged in basic research on various aspects of micromachine technologies. The grants are aimed at promoting both advances in micromachine technologies and increased exchange and cooperation between industry and academia.

On March 27, 2002, a ceremony to award the research grants was held at the Chuo University Surugadai Memorial Hall. Mr. Toshiro Shimoyama, Chairman of the Micromachine Center, gave the sponsor's greeting. Mr. Nobuhiko Sasaki, Director of the Industrial Machinery Division, METI, appeared as the guest speaker, and Prof. Yoji Umetani, Chairman of the Industry-Academia Joint Research Committee of the Micromachine Center reported on the selection results, after which a list of the grants was presented to each of the nine selected researchers. Associate Professor Ryo Yoshida of the University of Tokyo spoke on behalf of the grant recipients. Later, each of the three researchers in charge of the new research subjects that were selected, gave a brief summary of their research plans. After the ceremony, an informal gathering was held to allow attendees to congratulate and chat with the grant recipients in a relaxed atmosphere.

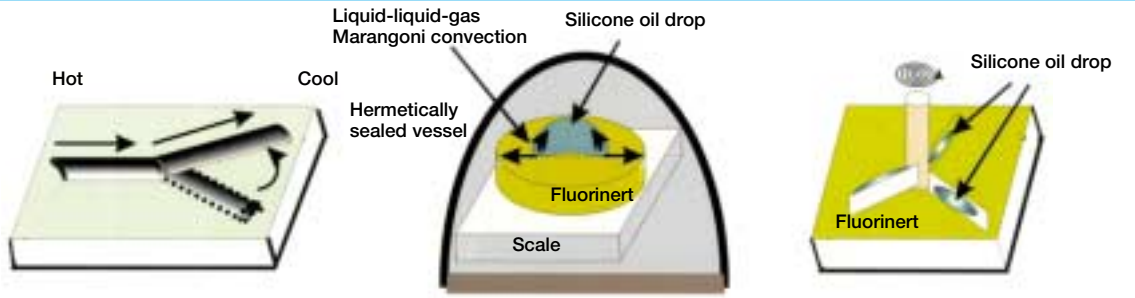
This research grant program will be ending this year.

Outline of the New Subjects for the 9th Micromachine Technology Research Grant

Basic Study on Microactuators Produced through Wettability Control and Surface-Tension-Driven Convection at the Liquid-Liquid-Gas Interface

Izumi Hirasawa, professor, Department of Applied Chemistry, Faculty of Sciences, Waseda University
Masato Sakurai, National Aerospace Laboratory of Japan

While wettability has conventionally been treated passively as a natural phenomenon, this study is aimed at developing a basic microreactor technology, wherein a hydraulic circuit is formed by actively controlling the dominant wettability on a microscale. The drive sources in this technique are interfacial tension-driven flows caused by temperature differences and the recently discovered liquid-liquid-gas surface-tension-driven convection in a silicone oil/fluorinert system. It is hoped that these technologies will serve as basic technologies for fluid handling systems used in space.



Path of flow is controlled by wettability distribution.
Fluid is driven by Marangoni convection.

The mechanism of Marangoni convection was found in a silicone oil-fluorinert system accommodated in a hermetically sealed vessel.

Rotation and other mechanical forces obtained from Marangoni convection in the silicone oil-fluorinert system.