

Olympus's MEMS Foundry Service

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1. Outline of MEMS Activities at Olympus

Olympus Corporation is involved in the fields of medicine, imaging, industry, and life sciences. Our areas of business rely largely on basic optical and precision technologies. Micro-electromechanical systems (MEMS) is a element technology that has enabled us to further develop these basic technologies in line with our goals. In April 2003, Olympus formed the MEMS Technology Division in order to unify all MEMS-related departments. Our division is committed to developing the core competence of MEMS technology, as well as new business enterprises. The MEMS Foundry is directly linked to our efforts in developing the latter and is expected to yield many developments.

2. History of Micromachine and MEMS Development at Olympus

MEMS development at Olympus originated with research on semiconductor devices. Beginning around 1980, we worked on developing general-purpose semiconductor devices and imagers for use in the office. In the 1990s, our research and development of MEMS was sparked through participation in the micromachine project and development of probes for an atomic force microscope called AFM cantilevers.

An AFM cantilever is a micro-device composed of Si or Si nitride films formed in a semiconductor process. The tip of the cantilever is formed of a probe having a curvature radius of 10 nm or less, the production of which requires ultra low stress thin film technology. This thin film technology differs from ordinary fabrication technologies for IC devices. Successful

commercialization of our AFM cantilever made it possible for us to develop a foundry for MEMS devices.

Through the micromachine project, we succeeded in developing various sensors and a 3D packaging technology integrating ICs with MEMS devices. Participation in the micromachine project allowed us to develop such advanced technologies as structure formation using polyimide and on-chip integration of piezoelectric materials, which have had a significant effect on our MEMS development.

Subsequent MEMS activities included the development and commercialization of optical MEMS used in optical instruments and research on Bio MEMS for the human genome. Last year, Olympus was accepted in the MEMS Project to develop a fabrication technology for high-precision optical MEMS aimed at the optical communications market. Accordingly, we have been developing advanced fabrication technologies and introducing state-of-the-art MEMS fabrication facilities.

3. Features of Our MEMS Foundry Services

The Olympus foundry handles all phases of development and production in accordance with the customer's needs, from consulting to device and process design and mass-production. We make the most of our accumulated MEMS-related technology assets and advanced, flexible trial production line. By making use of our accumulated knowledge for customer service, we will strive to achieve a high degree of customer satisfaction.

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