

Study of International MEMS Industry Trends

- Study of MEMS Foundries in Asia -

As one phase of the Study of MEMS Industry Trends and the NEDO-commissioned “Project to Disseminate the Achievements of the MEMS-ONE Project,” a group from the Micromachine Center visited foundry companies and relevant research institutions in Taiwan and Singapore, two of the centers for MEMS foundries in Asia, from December 5 through December 12, 2007. The group held discussions regarding the current state of foundry business and issues that must be resolved, as well as efforts to accommodate MEMS for integration and other future deployment.

The group visited the following companies and institutions:

◆Taiwan

- **tMt (Touch Micro-system Technology):** Foundry
- **apm (Asia Pacific Microsystems):** Foundry
- **ITRI (Industrial Technology Research Institute):**
MEMS Research Institution

◆Singapore

- **MEMS Technology:** Foundry
- **IME (Institute of Microelectronics):** MEMS Research Institution
- **SIMTech (Singapore Institute of Manufacturing Technology):**
MEMS Research Institution
- **IMRE (Institute of Materials research and Engineering):**
Micro-nano Research Institution
- **ANF (Asia Nano Forum):**
Small Tech & Nanotech Industrialization Support Institution



MEMSTECH



tMt



apm

Participating in the study were Isao Shimoyama, Professor of Tokyo University and Chair of the Industrial Trends Study Committee and International Interchange Committee; Masaharu Takahashi of the National Institute of Advanced Industrial Science and Technology (AIST) who is also a member of the Foundry Service Industries Committee and MEMS Personnel Training Committee, and Masao Arakawa of Matsushita Electric Works, Ltd. who is a member of the International Interchange Committee (with the latter two individuals participating in the Singapore study only). Participating from the MMC were Shunichi Adegawa and Junji Adachi. Mr. Arakawa is currently stationed at Panasonic Electric Works Asia Pacific Pte. Ltd. in Singapore, and he provided support for the study activities in Singapore.

The results of the study were reported as follows:

- The number of MEMS foundries in Taiwan declined from six in 2001 to three in 2007.
- apm, the largest foundry company in Taiwan, entered a capital alliance in 2006 with UMC, a CMOS foundry. The company is currently focusing exclusively on foundry business.
- Chip Sense, an affiliated company of UMC, was absorbed by apm in 2007.
- tMt is involved in both joint development with a Taiwanese company and foundry service business. In 2007, tMt became a member of the Walsin Group as a 100% subsidiary of Walsin.
- CMOS/MEMS integration is the current trend. In Taiwan, alliances with MEMS foundries have been initiated or explored, beginning with those of UMC and TSMC.
- MEMSTECH, the only MEMS foundry in Singapore, is pursuing device business as well. The company is currently focusing on the development and marketing of silicon microphones.
- MEMSTECH's foundry business is focused on fields in which the processes for the principal devices (sensors and microphones) can be used.