MEMS 2004

MEMS 2004 (IEEE The 17th International Conference on Micro Electro Mechanical Systems) was held from January 25 (Sun.) to 29 (Thurs.), 2004, at the Maastricht Exhibition and Convention Center (MECC) in Maastricht, The Netherlands. The conference welcomed over 600 participants in total; furthermore, the number of pre-registered participants (546) was a significant increase over last year's pre-registered attendance of 513, continuing the growth trend of recent years. Aided by the European venue, the conference enjoyed a good balance of participation for an international academic conference with 247 attendees from Europe, 118 from North America, and 178 from the Pacific Rim.

A total of 217 papers were presented (compared to 176 last year): 3 invited lectures (same as last year); 41 oral presentations (22 last year); and 173 poster presentations (151 last year). Due to the increase in MEMS R&D, the number of papers submitted for this conference has ballooned year on year (629 submissions this year as opposed to 500 last year: a 20% increase). Consequently, with the single session format for oral presentations employed again this year, presentations could not be contained in morning sessions as it was last year, and so a full-day program was implemented. By nationality, the most presentations were made by North Americans (80), followed by Japanese (48), Swiss (14), South Koreans (13), Germans, and Taiwanese (11). The European venue played some role in the high number of Swiss presentations. By field, a large proportion of presentations focused on bio & chemical microsystems; presentations on production, packaging, and mechanical-physical issues were also prominent.

In the first of the invited lectures, Prof. Nico de Rooij of the University of Neuchatel, who has also addressed an MMC-sponsored symposium, spoke on the topic "MEMS for Watches," introducing the value MEMS can add to watches giving the examples of Si gears and position sensors, and arousing great interest in the potential to create new value through the integration of conventional and MEMS technology. In the invited lecture held on January 27, Prof. Toko of Kyushu University spoke on the topic "Measurement of Taste and Smell using Biomimetic Sensors." The high expectations held for future results of this research were reflected in the eager applause that this presentation received.

Session 1, chaired by Prof. Tabata of Kyoto University, focused on self-organization, which has recently been attracting growing interest, and Session 2 focused on cell and particle handling. Together these two sessions provided a taste of the future directions of this research field. In Session 4, "Bio Medical Devices," presentations such as "Parylene Flexible Neural Probe with Micro Fluidic Channel" by the first speaker, Prof. Takeuchi of The University of Tokyo, provided a sense of overall future trends in the MEMS field, with high expectations held for NEMS (Nano Electro Mechanical Systems) and broad expansion of MEMS applications. Session 6, "Nano Electro Mechanical Systems," introduced the 3D nanofabrication technology using electron beam lithography that has been developed by NTT Basic Research Laboratories. The seconds-long around-the-world demonstration performed using the world's smallest globe - a 60μm diameter globe created using the NTT technology - met with enthusiasticapplause.

With respect to RF technology applications, oscillators and switches developed with MEMS have performed amply at the R&D level, indicating that we are moving even further towards full-fledged practical application.

This year's presentation themes cut a particularly good balance, highlighting both practical applications of MEMS technology and possibilities for the future.