

MEMS 2005, Miami (Jan. 30 – Feb. 3, 2005)

The 18th International Conference on Micro Electro Mechanical Systems (MEMS 2005) was held in Miami Beach, Florida at the Fontainebleau Hilton Resort from January 30 to February 3, 2005. The conference, which began in 1987 as the Micro Robots and Teleoperators Workshop, has continued to grow in scale, exceeding the previous year's numbers of submissions and participants.

The number of abstracts submitted for this year's conference was 750, of which 216 were accepted, a considerable increase over last year's 629 submissions, of which 217 were selected. Since the accepted number changed very little, the percentage of accepted abstracts dropped to 29% from 34% last year. Countries who gave the largest number of presentations this year were the United States with 107, Japan with 47, South Korea with 16, and Germany with 9, followed by Denmark, Holland, Switzerland, and Taiwan. By region, 50% of the presentations were given by North America, 21% by Japan, 16% by Europe, and 13% by Asian countries other than Japan. Among research institutes, 21 presentations were given by the University of Tokyo, 20 by the University of Michigan, 9 by the Georgia Institute of Technology, and 9 by the University of California, Berkeley. The final tally of participants was estimated at about 702, with 376 participants from North America, 162 from Asia, and 104 from Europe, based on advance enrollment.

Sessions of the conference featuring oral presentations were divided into the categories Self Assembly and Packaging, RF-MEMS, Pneumatic/Jet Systems, Optical Microsystems, Power MEMS, Physical Microsystems, Polymer MEMS, Bioanalytical Systems, and Nano Systems. Polymer MEMS was a new category established this year.

The presentations covered a wide range from basic research on materials, processing technologies, and

element technologies for actuation to applied research envisioning specific applications. However, few companies gave presentations detailing actually commercialized devices and systems. Overall, the conference seemed to serve as an opportunity for speculating about what systems will be produced over the long term. This impression is supported by the fact that 86% of all presentations were given by universities.

The three invited speakers at this year's conference introduced the principles of microfabricated atomic clocks, liquid lens technology, and direct methanol fuel cells, and reported on the recent trends and future outlook of these technologies. These fields are expected to have future applications and, consequently, seemed to attract much interest.

One of the general trends in many presentations appeared to be developing practical applications for RF-MEMS and Physical Microsystems based on CMOS. Presentations on Polymer MEMS talked about on-chip processing of the polymers themselves, and the use of polymers for flexible movement. Devices manufactured by combining nanoprocessed polymers (plastics) and silicon substrates that are capable of controlling the functions and performance expressed through nanoprocessing by extending and pulling the polymer with the silicon actuator likely indicate a future trend toward devices that are capable of integrating dissimilar materials.

There was also a sense of heightened anticipation for future applications of bio and nanomaterials in reports on cell patterning in the Bioanalytical Systems session, particularly with regard to imagers for patterning and mapping bacteriorhodopsin and property measurements of nanomaterials in the Nano Systems session.

Next year, MEMS 2006 is scheduled to be held in Istanbul, Turkey on January 22-26, 2006.



Conference room for oral presentations



Conference room for poster presentations