MMC Activities The 10th International Micromachine / Nanotech Symposium

The 10th International Micromachine / Nanotech Symposium, subsidized by the Japan Motorcycle Racing Organization and supported by METI and NEDO, was held on November 11 (Thursday), 2004, at the Science Museum in Kitanomaru Park, Tokyo. The themes for this symposium were "Micromachine technology for safe and secure advanced information societies", "New MEMS/ systems and technology", and "Policy trends of MEMS research and development"; 15 lectures were presented by invited speakers, 4 from overseas and 11 from within Japan. The symposium welcomed 359 participants altogether, including general attendees from both within Japan and overseas, speakers, invited guests, and members of the media. This number represents an increase of more than 20% over last year's attendance and includes the highest number of participants from within Japan to date. The symposium was a roaring success, with morning sessions in particular so packed there was barely standing room.

In Session 1, "Opening", an opening address was given by Dr. Tamotsu Nomakuchi, Chairman of the Micromachine Center, followed by a guest speech by Mr. Yoshinori Komiya, Director of the Industrial Machinery Division, Manufacturing Industries Bureau, METI. This was followed by a special lecture entitled "New progress of integration and fusion in MEMS – expectations for new industry creation", presented by Prof. Susumu Sugiyama of Ritsumeikan University. The input/output of LSI – the development of which enabled the realization of today's information society - is limited by electronic signals; MEMS, however, has the potential to input/output a diversity of signals - electronic, mechanical, optical, magnetic, chemical, and even biological. By combining MEMS with the remarkable technological innovation that is nanotechnology, it is anticipated that this field will bring about tremendous dreams for human society.

In Session 2, "Micromachine technology for safe and secure advanced information societies", speakers active at the forefront of the commercialization of cars, information equipment, and medical equipment presented lectures on the relationship between MEMS and these various products. Brimming as these productfocused lectures were with practicality, the already overflowing lecture hall took on an added air of excitement. Today micromachine (MEMS) technology is a key technology supporting a safe and secure highly information-orientated society. Thanks to MEMS technology and nanotechnology, such innovations as the ultimate safe car; the impressively creative, ultimate computer display; and the safe, reassuring, highly efficient, ultimate therapeutic capsule endoscope are no longer dreams.





Session 3, "New MEMS/ systems and technology", began with 3 lectures (2 by speakers from overseas and 1 by a speaker from within Japan) on the relationship between ubiquitous networks and MEMS. These were followed by 2 lectures (1 each by speakers from overseas and within Japan) on the application of MEMS in biomedicine. Various other lectures on timely topics were presented, including the smart skin for turbulence confrd insplred by dolphins skin, the integrated MEMS that examined the example of infrared image sensors, and the nanoimprinting technology. which enables micro and nano machining innovations with a view to moving away from the semiconductor process. From these it is clear that MEMS can potentially be applied and expanded in a vast array of fields. However, for this to be realized, R&D of new production technologies that considers cost reductions is also an important challenge for the future.



Session 4, "Policy trends of MEMS research and development" featured such lectures as one on market trends for MEMS that showed an expansion of the MEMS

market from 450 billion today to 1.35 trillion in 2010 and another on the METI/NEDO MEMS design and analysis support system development project (MEMS-ONE Project) - launched in an industry-academia consortium by the Micromachine Center – that highlighted the activities of the Micromachine Center. Furthermore, a lecture on systematic approaches in material research necessary to MST (Micro System Technology), launched by a European industry-academia consortium showed how global R&D is progressing overseas also.



Lasting from just after 9:00 a.m. until 6:00 p.m., the long program packed in 15 lectures, beginning with the special lecture, and the lecture hall was filled with an air of excitement. A sense of the enormity of the potential of micromachines and MEMS, and tremendous expectations for their future was palpable. Responses to the symposium included many favorable comments from participants, such as "I was able to learn about new trends and could see the direction in which commercialization is heading" and "MEMS-ONE is a highly desirable experiment; I hold high expectations for it," and some of the information presented in lectures was taken up and reported favorably by the media. Thanks to the efforts of our speakers, both from within Japan and overseas, who presented such topical information, and of the members of the program committee, who worked so hard to organize the program, this year's symposium was a resounding success.

The next symposium, The 11th International Micromachine / Nanotech Symposium, is planned for November 10 (Thursday), 2005, again at the Science Museum in Kitanomaru Park, Tokyo (located near the Imperial Palace), in conjunction with The 16th Micromachine Exhibition.