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A*STAR AND EDB LAUNCH MICRO-ELECTRO-MECHANICAL-SYSTEMS (MEMS) CONSORTIUM

Eight MNCs and SMEs join Consortium to Stimulate Growth and Raise Productivity of MEMS Manufacturing in Singapore

1. The Institute of Microelectronics (IME), a research institute of the Agency for Science, Technology and Research (A*STAR), today announced the launch of the Micro-Electro-Mechanical-Systems (MEMS) Consortium to bring together 8 MNCs and local enterprises from the MEMS supply chain in public-private sector research collaboration to grow the MEMS industry in Singapore.

2. The members include: Coventor, Inc., EPCOS PTE LTD (A Group Company of TDK-EPC Corporation), GLOBALFOUNDRIES, Intellisense Software Corp., NEC SCHOTT Components Corporation, Seiko Instruments Inc., Systems on Silicon Manufacturing Company Pte. Ltd. (SSMC) and Tango Systems, Inc.

3. Together with IME and the Institute of Materials and Research and Engineering (IMRE), the Consortium has a wide spectrum of deep capabilities in research and development, wafer fabrication, integrated device manufacturing (IDM), assembly and test, design and computer-aided design (CAD), and equipment and materials.

4. Supported by A*STAR and the Singapore Economic Development Board (EDB), the Consortium will establish a technology platform, where they could collaborate on:

- a. standardizing the MEMS design, process and packaging for multiple applications, eg, Post-CMOS (Complementary metal-oxide-semiconductor) Surface Micromachining MEMS, Bulk micro-machined Silicon on Insulator (SOI) MEMS; and hermetic sealing and wafer level packaging of MEMS devices;
- b. developing technical expertise and know-how to facilitate MEMS development, prototyping and manufacturing in Singapore;
- c. promoting collaboration among companies for an integrated solution for MEMS Manufacturing; and

d. training manpower in MEMS related technology.

5. Said Professor Dim-Lee Kwong, Executive Director of IME, "Through the MEMS Consortium, we are able to bring MNCs and local SMEs together on the same technology platform to facilitate interaction and foster research collaboration. This will create opportunities for SMEs to develop the technical know-how, as well as train a pool of talent for the MEMS supply chain."

6. Agreeing, Professor Low Teck Seng, Deputy Managing Director (Research), A*STAR, said, "A*STAR's science and engineering research institutes have deep expertise in a range of industry-relevant capabilities, for the design, fabrication, packaging and system level integration of MEMS sensors and actuators, which companies in the MEMS industry can readily tap. This technology platform is an example of how A*STAR's research institutes can engage MNCs and local enterprises through R&D partnerships, technology development efforts, manpower training and outreach efforts."

7. Added Dr Lim Khiang Wee, Executive Director of A*STAR's Institute of Materials Research and Engineering (IMRE), "An example would be IMRE's expertise in High Resolution X-ray Diffraction and Atomic Force Microscopy, which will be used to explore the use of thin film aluminium nitride (AlN) materials in piezoelectric transducers that will allow the MEMS devices to work at higher bandwidths and reduce the rate of energy loss."

8. Said Mr Lim Chuan Poh, Chairman of A*STAR, "Our local enterprises form a significant portion of our manufacturing sector and they play a major role in supporting the MNCs. It is therefore important to create platforms for the local enterprises to be geared for continued growth by helping them to upgrade their capabilities and keep pace with the rapidly changing technological landscape. The MEMS Consortium is an excellent way for our local enterprises to be linked up with the MNCs as part of an industry cluster approach to develop research and innovation activities in a synergistic way. The MEMS Consortium will also enable us to cultivate a strong local supplier base that will not only be competitive in Singapore but in the region and beyond."

9. MEMS devices, in their very basic form, are miniaturized or micro-scaled versions of electrical and mechanical devices such as pressure sensors, valves, hinged mirrors, gears and cantilevers. They are manufactured by techniques similar to that used for manufacturing semiconductor devices. The use of MEMS is pervasive. Some examples of where they are used include accelerometer, inkjet heads, micro-mirrors, microphones, gyroscopes, flow sensors, game consoles, projectors, hard-disks, blood pressure monitors, barcode scanners and automotive applications.

10. Said Mr Damian Chan, Director (Electronics) of EDB, "MEMS is a rapidly growing area, driven by many new applications in biomedical, wireless communication and consumer electronics. As such, this collaboration is a unique opportunity for global players to leverage on each other's unique

expertise, to help spur the electronics sector in Singapore.” Globally, the MEMS device market, worth USD 6.9 billion in 2009, is expected to grow at a compound annual growth rate of 12% from now till 2014¹.

11. The launch of the MEMS consortium adds on to the growing list of industry consortia spearheaded by A*STAR. These include the 3-Dimensional Through-Silicon Via Consortium, which brings together 18 MNCs, local SMEs with A*STAR RIs to boost next-generation wafer manufacturing capability, and the SERC Aerospace Programme, which is 18-member aerospace industry consortia working with A*STAR RIs on pre-competitive R&D.

¹ According to Market Research Report by Yole Development: *Status of the MEMS Industry 2009*, Oct 2009.

About the Agency for Science, Technology and Research (A*STAR)

The Agency for Science, Technology and Research (A*STAR) is the lead agency for fostering world-class scientific research and talent for a vibrant knowledge-based and innovation-driven Singapore. A*STAR oversees 14 biomedical sciences, and physical sciences and engineering research institutes, and nine consortia & centres, which are located in Biopolis and Fusionopolis, as well as their immediate vicinity.

A*STAR supports Singapore's key economic clusters by providing intellectual, human and industrial capital to its partners in industry. It also supports extramural research in the universities, hospitals, research centres, and with other local and international partners.

For more information about A*STAR, please visit www.a-star.edu.sg.

About the Institute of Microelectronics (IME)

The Institute of Microelectronics (IME) is a research institute of the Science and Engineering Research Council of the Agency for Science, Technology and Research (A*STAR). Positioned to bridge the R&D between academia and industry, IME's mission is to add value to Singapore's semiconductor industry by developing strategic competencies, innovative technologies and intellectual property; enabling enterprises to be technologically competitive; and cultivating a technology talent pool to inject new knowledge to the industry. Its key research areas are in integrated circuits design, advanced packaging, bioelectronics and medical devices, MEMS, nanoelectronics, and photonics.

For more information, visit IME on the Internet: <http://www.ime.a-star.edu.sg>.

About the Singapore Economic Development Board (EDB)

EDB is the lead government agency for planning and executing strategies to enhance Singapore's position as a global business centre and grow the Singapore economy. We dream, design and deliver solutions that create value for investors and companies in Singapore. In so doing, we generate economic opportunities and jobs for the people of Singapore; and help shape Singapore's economic future.

'Host to Home' articulates how EDB is sharpening its economic development strategies to position Singapore for the future. It is about extending Singapore's value proposition to businesses not just to help them improve their bottom line, but also to help them grow their top line. EDB plans to build on existing strengths and add new layers of capabilities to enable Singapore to become a 'Home for Business', a 'Home for Innovation' and a 'Home for Talent'.

For more information on how EDB can help your business, please visit www.sedb.com.

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