MEDIA RELEASE

A*STAR INSTITUTE OF MICROELECTRONICS ANNOUNCES MEMS CONSORTIUM PHASE II TO PAVE THE WAY FOR HIGH VOLUME MANUFACTURING

Singapore, 6 June 2012

A*STAR Institute of Microelectronics (IME) has announced the launch of its Micro-Electro-Mechanical-Systems (MEMS) Consortium Phase II, to accelerate MEMS technology into markets driven by strong demand for next generation mobile devices. The second phase of the MEMS Consortium will build on the work accomplished in Phase I to develop 3 product-oriented (PO) devices, namely, the Oscillator, Magnetometer and Energy Harvester, which are among the fastest growing MEMS devices in the next five years.

Phase I has successfully established common MEMS technology platforms for Silicon-On-Insulator (SOI) MEMS, aluminum nitride radio frequency (AIN RF) MEMS and wafer-level packaging (WLP) with solder hermetic bonding. Phase II will focus on establishing MEMS process modules and MEMS-CMOS integration methodologies for the chosen PO devices based on IME's advanced through-silicon-via (TSV) technology. With the devices as demonstration vehicles, Phase II also aims for developing a process design kit (PDK) for MEMS, paving the way for standardization and cost-effective MEMS solutions for high volume manufacturing.

"The achievements of MEMS Consortium Phase I has given us a strong momentum to elevate to the next phase of the MEMS Consortium roadmap, which will focus on design enablement and IP development," said Prof. Dim-Lee Kwong, Executive Director of IME. "The MEMS Consortium demonstrates the value of collaborative partnership between IME and the industry to enable our partners to move to high volume manufacturing and spur the commercial development of MEMS in Singapore."

The MEMS Consortium Phase II has attracted company members spanning the mobile device supply chain from system, integrated device manufacturer, foundry, assembly & test, to equipment and material companies. Current members include AAC Technologies, Robert Bosch, Lite-On Technology, Marvell Technology, Murata Electronics, GLOBALFOUNDRIES, Coventor, EV Group, SPTS, AMEC, Okmetic and Soitec.

"The MEMS Consortium lead by IME is valuable in developing a MEMs eco-system within Singapore that will allow us to access valuable IPs, develop differentiated

products and commercialize devices in high volumes for our end markets. Lite-on Technology looks forward to the collaboration with IME and the consortium's valuable partners in developing the MEMS industry in Singapore," said Mr Sanjay Krishnan, Strategy and Business Development Manager, Lite-on Technology.

"Murata hopes to adapt IME's MEMS process and PDK to our products, and to take off quickly through the consortium's supply chain," said Mr Tadao Fukura, General Manager, Product Development Dep.3, New Technology & Products Development Group, Murata.

"Design enablement and standardization of MEMS processing are key areas that will significantly shorten the cycle time for MEMS product development and ramp to volume manufacturing. With Phase II consortium focus on these areas, GLOBALFOUNDRIES can leverage and provide a cost effective and timely manufacturing solution to our customers," commented Dr Rakesh Kumar, Director for MEMS Program at GLOBALFOUNDRIES.

"We are very pleased to collaborate with IME through this consortium and we hope to contribute to the success of these new MEMS applications in bringing our key expertise in engineered substrates," said Mr Stephane Barrau, Vice President of Operations in Singapore, Soitec.

"The collaboration with IME suits perfectly to Okmetic´s long-term targets as the devices developed in this program use same type of advanced MEMS silicon wafers that Okmetic is currently selling and developing further," said Mr Markku Tilli, Senior Vice President of Research, Okmetic.

"We are pleased to be part of the IME MEMS Consortium Phase II," said Mr Tom Flynn, Vice President Sales and Business Development, Coventor. "Coventor will be working with IME to create robust PDK libraries and embed these into our simulation tools and validating these PDK's with reference designs to support the MEMS Consortium Phase II to achieve its objectives."

"SPTS Technologies is an integral member of the MEMS manufacturing community, and we are proud to be a part of the MEMS Consortium. As an equipment maker with extensive process experience, we look forward to contributing to the success of this consortium under IME's leadership. The collaboration will play an important role in developing cutting-edge MEMS technologies in Singapore, boosting MEMS manufacturing in Southeast Asia," said Mr Kevin Crofton, Executive Vice President and Chief Operating Officer, SPTS Technologies.

"The MEMS II consortium on MEMS development enhances our competitiveness in the global MEMS arena, particularly in helping us create new bonding technologies," said Mr. Frank Huysmans, Sales Manager Asia/Pacific at EV Group.

“Advanced Micro-Fabrication Equipment Inc. (AMEC) is pleased to collaborate with IME and Consortium members to enable the high volume production of MEMS. We are pleased to be able to contribute to the further development of MEMS and its commercialization in Singapore,” said Mr K H Koh, Vice President and General Manager, AMEC International Pte Ltd.

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 at: http://www.ime.a-star.edu.sg.

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 seven consortia & centre, 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.

About the MEMS Consortium
The IME MEMS Consortium is a panel of comprising of IME, multi-national companies and local companies in Singapore with the mission of accelerating MEMS innovation into broad markets. Members of the IME MEMS Consortium work together to foster a more effective ecosystem through *collaboration, integration* and *innovation* to pave the way for successful near term commercialization of products and technologies.

For IME
Media Contact:
Cindy Chew
Industry Development
Institute of Microelectronics
DID: +65 6770 5375
Email: chewwfc@ime.a-star.edu.sg