

PRESS RELEASE

INSTITUTE OF MICROELECTRONICS AND VENDORS OF THE SEMICONDUCTOR SUPPLY CHAIN JOIN FORCES IN 3-DIMENSIONAL THROUGH-SILICON VIA CONSORTIUM

Singapore, 24 February 2010 - The Institute of Microelectronics (IME) today announced its collaborative partnership with Singapore's semiconductor industry supply chain vendors to support the research and development of 3-Dimensional (3D) Through-Silicon Via (TSV) Consortium. Key materials providers of the semiconductor industry joined hands with IME and members of the Consortium in the development of a cost-effective TSV process integration and manufacturing capability on 300mm wafers. Supporting companies include 3M™, Asahi Glass Co., Ltd., Brewer Science Inc., HD Microsystems, Hitachi Chemical Co., Ltd., Nagase & Co., Ltd., Namics Corporation, Nitto Denko (Singapore) Pte. Ltd., OM Group Ultra Pure Chemicals, Sekisui Chemical Co., Ltd., Shanghai Sinyang Semiconductor Materials Co., Ltd., Sumitomo Bakelite Co., Ltd., The Dow Chemical Company and Thin Materials AG.

The [3D TSV Consortium](#), launched in September 2009 and supported by the Singapore Economic Development Board (EDB) and A*STAR, is to boost 300mm wafer manufacturing capability for Singapore's semiconductor industry. Members of the Consortium include GLOBALFOUNDRIES Singapore Pte. Ltd., STATS ChipPAC Ltd. and United Test and Assembly Center Ltd.

The collaborative approach between the supporting companies and the 3D TSV Consortium is to leverage on each other's unique expertise to co-develop materials required for TSV processes, thin wafer handling and packaging assembly process. The concerted effort will shorten development cycle time and establish an implementable 3D TSV packaging process and design guidelines for industry adoption of 3D TSV. Materials under evaluation by the development team include plating chemicals for TSV filling, chemical-mechanical planarisation (CMP) slurries, sacrificial bonding materials for thin wafer processing and handling, low curing temperature dielectric materials, adhesives for fine-gap and fine-pitch die/wafer-level filling and wafer level encapsulants.

Professor Dim-Lee Kwong, Executive Director of IME, said "The 3D TSV Consortium provides an ideal platform to integrate key companies across Singapore's semiconductor supply chain to co-develop next generation technology. As the semiconductor industry is continually driving down total manufacturing cost, being able to interactively work with materials providers and end users on product requirements and development eliminates costly development oversights. This strategic collaborative partnership reduces the development cycle time, manufacturing cost and risk involved. This harmonisation creates win-win partnerships that will enhance the competitiveness of Singapore's semiconductor industry."

Mr. Damian Chan, Director Electronics, EDB, said "3D TSV is a critical technology that will enable the continued miniaturisation, performance enhancement and energy efficiency of

electronics devices such as smart phones, notebooks and e-readers. The participation of these leading materials providers will further increase the depth of 3D TSV Consortium. It will build on the strength of the Singapore semiconductor ecosystem, wherein Singapore's semiconductor output share of global semiconductor revenues has almost doubled from about 6% in 2001 to 11% in 2008."

IME is leading Phase 1 of the Consortium with the goal to establish TSV design and processes for 200mm and 300mm TSV wafers 3D IC assembly, and train a pool of skilled personnel in the semiconductor supply chain companies to support manufacturing of new products with 3D TSVs. Phase 2 will demonstrate the integration of fully functional mobile devices with TSV on a 300mm wafer process line.

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. 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>.

For media enquiries, please contact:

Tan Su-Lynn
Marketing & Communications
Institute of Microelectronics
DID: +65-6770 5375
Email: tansl@ime.a-star.edu.sg