

MEDIA RELEASE

A*STAR'S INSTITUTE OF MICROELECTRONICS AND STANFORD UNIVERSITY TO JOINTLY DEVELOP "SWITCH TECHNOLOGY" FOR HIGHER ENERGY EFFICIENCY IN MOBILE DEVICES AND DIGITAL SYSTEMS

1. Singapore, 14 Feb 2013 - A*STAR's Institute of Microelectronics (IME) and Stanford University will collaborate to advance innovations in nano-electromechanical systems (NEMS) switch technology for ultra low power digital systems. The use of NEMS switches in digital systems such as laptops and smart phones can extend operational time of existing batteries, thereby increasing energy efficiency of such devices.
2. The higher energy efficiency of NEMS switches stems from its ability to effectively stamp out leakage currents that occur during passive standby mode. Leakage current is one of the leading sources of power consumption in digital systems based on traditional semiconductor switches. By replacing these traditional switches with NEMS switches, the total power consumption of a digital block can be reduced by up to 10x.
3. Under the agreement, IME and Stanford University will jointly develop the NEMS fabrication process and device. The project will proceed in two phases, with the first phase focused on demonstrating the reliable operation of the NEMS switch by this year.
4. On the joint project, Dr Lee Jae Wung, the IME Scientist leading the project, said, "One of the challenges in building a reliable NEMS switch is in achieving Thin Film Encapsulation to protect the switch structure and the contact materials from degradation and oxidation by providing proper vacuum condition and/or filling inert gas inside the cavity. IME's capabilities in back end of line compatible materials and processes are expected to contribute strongly in this area."

5. “NEMS relay has proven to be an effective complement to conventional Si CMOS technology for reducing power consumption. The collaboration with IME will advance this device technology to a manufacturing process that is suitable for co-integration with Si CMOS in practical applications,” said Professor Philip Wong, Willard R. and Inez Kerr Professor in the School of Engineering at Stanford University.

About 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 about IME, please visit <http://www.ime.a-star.edu.sg>.

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

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Media Contact:

Song Shin Miin

Institute of Microelectronics (IME)

DID: +65 6770 5317

Email: songsm@ime.a-star.edu.sg