



JOINT NEWS RELEASE

A*STAR Targets the Silicon Photonics Industry through Exploit Technologies' Flagship Programme

- IME Partners with SiOptical to Develop a Silicon-based Optical Modulator with Manufacturing Support from Chartered

Singapore, 26 June 2006 – Singapore's Agency for Science, Technology and Research (A*STAR) aims to harness its silicon photonics capabilities to jump-start a silicon photonics industry in Singapore through joint research and development, production and manufacture with local and overseas partners.

Today, A*STAR's Institute of Microelectronics (IME) and US-based technology company SiOptical, Inc signed a Research Collaboration Agreement to jointly develop fabrication technology for silicon-based photonics and circuits, such as silicon waveguide, optical modulators, detectors and the associated fiber alignment structures.

In addition, a three-party Memorandum of Understanding was signed among IME, SiOptical and Chartered Semiconductor Manufacturing Ltd (Chartered), one of the world's top dedicated semiconductor foundries, in support of the manufacture of the silicon photonics technology and optoelectronics devices jointly developed by IME and SiOptical.

IME's tie-up with SiOptical and Chartered marks the first industry move in Singapore to harness silicon photonics technologies and a major milestone in Exploit Technologies' Flagship Program on silicon photonics. (More about Exploit Technologies can be found in "background information").

Optoelectronic devices used by telecommunication companies and long-haul fiber-optic networks for high-bandwidth communications over thousands of kilometres are typically made from materials like indium phosphide and gallium arsenide which are costly to mass produce. Silicon photonics is the use of silicon-based materials for the generation, guidance, control and detection of light to communicate information. As silicon has proven to be cost-effective for the fabrication of integrated circuits, building optical devices on a silicon platform is considered a major thrust for the next generation of optoelectronic integrated circuits.

IME's established process modules for silicon photonics crystal and processing capabilities will be used in this one-year collaborative project with SiOptical to develop the required fabrication technology for silicon-based optical devices and circuits. All the device fabrication technology will be Complementary Metal Oxide Semiconductor

(CMOS)-compatible and developed in a manner that can potentially be transferred to Chartered's fabrication facilities for mass production.

Mr Boon Swan Foo, Managing Director of A*STAR and Executive Chairman of Exploit Technologies, commented, "Silicon photonics is an exciting technology with an emerging market and industry players. Exploit Technologies has identified silicon photonics as a competitive strength of A*STAR and will be driving it under our flagship programmes. We aim to create disruptive IPs and technologies over the next three years and build up an industry here by attracting more companies to Singapore. This collaboration with SiOptical is a strategic step in utilizing and enhancing IME's CMOS process capability in fabricating silicon photonics devices. The MOU signed today with Chartered demonstrates how A*STAR can go beyond technology development to help link up our collaborator with industry players for cost-effective mass production of our collaborators' devices."

Said Professor Dim-Lee Kwong, Executive Director of IME, "There is tremendous potential for silicon photonics to integrate different types of devices into a single silicon platform. If CMOS compatibility is maintained, photonic devices might even be monolithically integrated with electronics – converging electronic computing with optical communication all on one single silicon chip. IME is in a position to leverage its expertise in silicon photonics research to make this possible."

"Traditional photonics is lagging 30 years behind silicon CMOS technology in terms of integration, manufacturability and maturity. The IME, Chartered Semiconductor, SiOptical partnership will enable low cost monolithic integration of Optics and Electronics in Silicon CMOS and bridge the gap between CMOS electronic devices and traditional photonic devices. The integrated CMOS photonic devices will enable a new class of compact, low power, low cost, products that will address a wide range of existing and new market opportunities," said Mr Vijay Albuquerque, President and CEO of SiOptical Inc.

"Chartered is pleased to associate our advanced semiconductor manufacturing capabilities with this exciting, Singapore-based technology development driven by two organizations pioneering breakthrough solutions for the application of optics to silicon," said Mr Chia Song Hwee, President and CEO of Chartered. "Our expertise in manufacturing and economies of scale brings leverage in creating new cost opportunities for proliferating optical-based communication solutions."

BACKGROUND INFORMATION

About A*STAR, Exploit Technologies and IME

The **Agency for Science, Technology and Research (A*STAR)** is Singapore's national agency for science and technology, supporting the development of industry clusters. Its mission is to foster world-class scientific research and talent for a vibrant knowledge-based Singapore. The Agency comprises the Biomedical Research Council, the Science and Engineering Research Council, A*STAR Graduate Academy, Policy and Personnel, and Corporate Planning and Administration Divisions, and a commercialization arm, Exploit Technologies Pte Ltd. The two research councils fund and oversee 12 public research institutes engaged in cutting edge research

in the physical sciences, engineering and biomedical sciences. Our institutes build up intellectual capital and trains research talent to deepen Singapore's scientific capabilities.

(website: www.a-star.edu.sg)

Exploit Technologies Pte Ltd (ETPL), the commercialisation arm of A*STAR, manages the intellectual property portfolio of A*STAR's research institutes and centres. ETPL facilitates the efficient transfer of A*STAR's technologies to industry, ensuring that new intellectual property generated by our researchers is exploited to produce tangible products and services.

(website: www.exploit-tech.com)

The **Institute of Microelectronics (IME)** is a research institute of A*STAR. Positioned to bridge the R&D between academia and industry, IME's mission is to increase value-add to the electronics industry in Singapore by engaging in relevant R&D in strategic fields of microelectronics; supporting and partnering the electronics industry; and developing skilled R&D personnel. Its key research areas are in integrated circuits and systems; semiconductor process technologies and microsystems, modules and components.

(website: www.ime.a-star.edu.sg)

About SiOptical Inc

Based in Allentown, Pa., SiOptical is a fabless photonics start-up company. Its mission is to provide best in class, low power, low cost, next generation interconnect solutions using CMOS optoelectronics.

About Chartered Semiconductor

Chartered Semiconductor Manufacturing (Nasdaq: CHRT, SGX-ST: CHARTERED), one of the world's top dedicated semiconductor foundries, offers leading-edge technologies down to 65 nanometer (nm), enabling today's system-on-chip designs. The company further serves the needs of customers through its collaborative, joint development approach on a technology roadmap that extends to 45nm. Chartered's strategy is based on open and comprehensive design enablement solutions, manufacturing enhancement methodologies, and a commitment to flexible sourcing. In Singapore, the company operates a 300mm fabrication facility and four 200mm facilities. (www.charteredsemi.com)

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