



Applied Materials and A*STAR Announce New R&D Joint Lab in Singapore for Advanced Semiconductor Technology

October 18, 2015

- *New S\$150 million joint investment is expected to create 60 jobs for highly skilled scientists, engineers and researchers.*

SINGAPORE, October 19, 2015 - Applied Materials, Inc. today announced it plans to establish a new R&D laboratory in Singapore in collaboration with the Agency for Science, Technology and Research (A*STAR). The S\$150 million joint investment will focus on developing advanced semiconductor technology to fabricate future generations of logic and memory chips.

The S\$150 million joint lab will be housed within A*STAR's new R&D cluster at Fusionopolis Two and will feature a 400 square meter Class 1 cleanroom with state-of-the-art semiconductor process equipment that has been custom designed and built by Applied Materials. The facility will be staffed by 60 highly skilled researchers and scientists, working together with extended research teams at A*STAR's other research institutes.

The joint lab combines Applied Materials' leading expertise in materials engineering with A*STAR's multi-disciplinary R&D capabilities. A*STAR's Institute of Microelectronics (IME), Institute of Materials Research and Engineering (IMRE), and Institute of High Performance Computing (IHPC) will contribute to research in low-defect processing, ultra-thin film materials, materials analysis and characterization, and modelling and simulation in many areas. The joint lab is also supported by The Singapore Economic Development Board, and is in line with its efforts to promote leading-edge R&D and advanced manufacturing activities. The intention is for products developed by the joint lab to be manufactured by Applied Materials in Singapore. In addition, Applied Materials plans to conduct experiments on the synchrotron at the Singapore Synchrotron Light Source (SSLS) and work with the National University of Singapore where a new beamline for semiconductor applications is to be developed. Funding for the construction of the new beamline is supported by the National Research Foundation.

Mr. Gary Dickerson, President and Chief Executive Officer of Applied Materials, Inc., said, "A*STAR and the government of Singapore have been great R&D partners for Applied Materials. We are excited to expand our collaboration to develop advanced semiconductor technology for extending Moore's Law. Applied Materials' leading expertise in materials engineering can help solve the challenges of producing future generations of logic and memory chips."

Mr. Lim Chuan Poh, Chairman, A*STAR, said, "This collaboration will catalyse the development of emerging technologies for the global electronics market and advance Singapore's position as a key R&D hub for the industry. The joint lab reaffirms A*STAR's multi-disciplinary R&D capabilities to drive innovation in the electronics sector, a key growth area for Singapore's economy, and will generate further economic value through the creation of good jobs."

"The joint lab will strengthen capabilities for Applied Materials in Singapore, as we expand from advanced manufacturing to early stage R&D and designing global products," said Mr. Russell Tham, Corporate Vice President & Regional President South East Asia, Applied Materials, Inc. "Successful public-private partnerships, leveraging complementary strengths, help create new forms of value from Singapore and keep the local industry competitive."

Prof Raj. Thampuran, Managing Director, A*STAR, said, "The new joint lab takes the longstanding collaboration between Applied Materials and A*STAR to the next level, and will marshal our combined strengths in research, development, innovation and industrial applications. This technology will pioneer new processes and techniques to advance the fabrication of semiconductor devices."

The new joint lab marks Applied Materials' second collaboration with A*STAR. In 2012, Applied and A*STAR's IME formed a Center of Excellence in Advanced Packaging in Singapore to develop advanced 3D chip packaging technology.

About Applied Materials

Applied Materials, Inc. (Nasdaq:AMAT) is the global leader in materials engineering solutions for the semiconductor, flat panel display and solar photovoltaic industries. Our technologies help make innovations like smartphones, flat screen TVs and solar panels more affordable and accessible to consumers and businesses around the world. Learn more at www.appliedmaterials.com.

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

The Agency for Science, Technology and Research (A*STAR) is Singapore's lead public sector agency that spearheads economic oriented research to advance scientific discovery and develop innovative technology. Through open innovation, we collaborate with our partners in both the public and private sectors to benefit society.

As a Science and Technology Organisation, A*STAR bridges the gap between academia and industry. Our research creates economic growth and jobs for Singapore, and enhances lives by contributing to societal benefits such as improving outcomes in healthcare, urban living, and sustainability.

We play a key role in nurturing and developing a diversity of talent and leaders in our Agency and Research Institutes, the wider research community and industry. A*STAR oversees 18 biomedical sciences and physical sciences and engineering research entities primarily located in Biopolis and

Fusionopolis.

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

About A*STAR's 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 on IME, please visit www.ime.a-star.edu.sg.

About A*STAR's Institute of Materials Research and Engineering (IMRE)

The Institute of Materials Research and Engineering (IMRE) is a research institute of the Agency for Science, Technology and Research (A*STAR). The Institute has capabilities in materials analysis & characterisation, design & growth, patterning & fabrication, and synthesis & integration. We house a range of state-of-the-art equipment for materials research including development, processing and characterisation. IMRE conducts a wide range of research, which includes novel materials for organic solar cells, photovoltaics, printed electronics, catalysis, bio-mimetics, microfluidics, quantum dots, heterostructures, sustainable materials, atom technology, etc. We collaborate actively with other research institutes, universities, public bodies, and a wide spectrum of industrial companies, both globally and locally.

For more information about IMRE, please visit www.imre.a-star.edu.sg.

About A*STAR's Institute of High Performance Computing (IHPC)

A*STAR's Institute of High Performance Computing (IHPC) was established in August 1998 to provide leadership in high performance computing as a strategic resource for scientific inquiry and industry development. It seeks to power discoveries through advanced methodologies, techniques and new tools in modelling, simulation and visualisation. Its core research areas are in the realm of complex-coupled systems, mechanics and fluid dynamics, large-scale systems, digital modelling, adaptive and collaborative computing, data mining and analysis, computational electronics and electromagnetics, computational materials science and chemistry.

For more information about IHPC, please visit www.ihpc.a-star.edu.sg.

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