Applied Materials and A*STAR's Institute of Microelectronics Expand Research Collaboration to Accelerate Heterogeneous Chip Integration with Hybrid Bonding Technology

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- *Organizations sign five-year extension to their R&D engagement, including an expansion of the Applied Materials–Institute of Microelectronics Center of Excellence in Advanced Packaging in Singapore*
- *New phase of research aims to accelerate breakthroughs in materials, equipment and process technologies for hybrid bonding and other emerging, 3D chip integration technologies*
- *Expansion provides semiconductor and systems companies with a complete suite of tools and technologies for developing and prototyping hybrid bonding packaging designs*

SINGAPORE, Dec. 23, 2021 (GLOBE NEWSWIRE) -- Applied Materials, Inc. and the Institute of Microelectronics (IME), a research institute of Singapore's Agency for Science, Technology and Research (A*STAR), today announced a new phase of their research collaboration at the Center of Excellence in Advanced Packaging in Singapore.

As traditional Moore's Law scaling slows, chipmakers and systems companies are increasingly looking to heterogeneous design and advanced packaging solutions to enable continued advances in power, performance, area, cost and time-to-market (PPACt™). By combining chips of various nodes and functions in a single package, heterogeneous integration also enables smaller form factors and greater design and manufacturing flexibility. An emerging form of heterogeneous integration called hybrid bonding connects chips and wafers with direct copper-to-copper bonding, thereby reducing wiring distances and increasing input/output (I/O) density. This improves power efficiency and enables greater system performance.

Under the new phase of their R&D engagement, Applied Materials and A*STAR's IME aim to accelerate the AI era of computing by driving breakthroughs in heterogeneous integration and advanced packaging for semiconductor innovation. The parties have signed a five-year extension to their existing research collaboration and will make a new, combined investment of approximately USD$210 million to upgrade and expand the Center of Excellence in Advanced Packaging in Singapore to accelerate materials, equipment and process technology solutions for hybrid bonding and other emerging, 3D chip integration technologies.

Singapore's Minister for Trade and Industry, Mr. Gan Kim Yong, presided at the ceremony today to kick off the third phase of the R&D collaboration between the organizations.

"Creating breakthroughs in heterogeneous integration and advanced packaging is a key element of Applied Materials' strategy to be the PPACt enablement company™ for our customers," said Dr.Prabu Raja, Senior Vice President and General Manager of the Semiconductor Products Group at Applied Materials. "We are excited to extend our research collaboration with A*STAR's IME, and look forward to accelerating hybrid bonding technology and further innovations in 3D chip integration technologies for the semiconductor and computing industries."

"This year marks the 30th anniversary of Applied Materials in Singapore and we are grateful for the continuous support and collaboration from A*STAR's IME," said Mr. Brian Tan, Regional President, Applied Materials South East Asia Pte. Ltd. "Together, our organizations have created tremendous value for the Singapore R&D and manufacturing ecosystems, and through our latest efforts we aim to continue building up local talent and infrastructure to address global technology inflections."

"We are pleased at how Applied Materials has decided to take another step forward with us, to further expand its R&D activities in Singapore," said Professor Alfred Huan, Assistant Chief Executive, Science & Engineering Research Council, A*STAR. "We are confident that this next phase of collaboration with Applied Materials will help to create more business opportunities and future-ready talent pools for Singapore. This will benefit partners in the ecosystem, attract new industry players, and strengthen Singapore's position as a global leader in the advanced packaging sector," he added.

"Through this collaboration, we will see IME's strategic R&D capabilities in advanced packaging and heterogeneous integration complement Applied Materials' world-class expertise gained through its Advanced Packaging Development Center. We aim to add value to the semiconductor sector by working with companies to co-develop solutions, transfer technologies, and increase Singapore's competitiveness in this space," said Mr. Terence Gan, Executive Director (Designate), Institute of Microelectronics (IME), A*STAR.

About Applied Materials
Applied Materials, Inc. (Nasdaq: AMAT) is the leader in materials engineering solutions used to produce virtually every new chip and advanced display in the world. Our expertise in modifying materials at atomic levels and on an industrial scale enables customers to transform possibilities into reality. At Applied Materials, our innovations make possible a better future. Learn more at www.appliedmaterials.com.

About A*STAR's Institute of Microelectronics (IME)
The Institute of Microelectronics (IME) is a research institute 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 Heterogeneous Integration, System-in-Package, Sensor, Actuators and Microsystems, RF & mmWave, SiC/GaN-on-SiC Power Electronics, and MedTech. For more information about IME, please visit www.a-star.edu.sg/ime.

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 R&D agency. Through open innovation, we collaborate with our partners in both the public and private sectors to benefit the economy and 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 improving societal outcomes in healthcare, urban living, and sustainability. A*STAR plays a key role in nurturing scientific talent and leaders for the wider research community and industry. A*STAR's R&D activities span biomedical sciences to physical sciences and engineering, with research entities primarily located in Biopolis and Fusionopolis. For ongoing news, visit www.a-star.edu.sg.

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