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## **A\*STAR's Institute of Microelectronics and STMicroelectronics Team Up on Silicon Carbide R&D for the EV Market and Industrial Applications**

*Collaboration to help develop SiC ecosystem in Singapore*

**Singapore, November 25, 2021** – The Institute of Microelectronics (IME) at the Agency for Science, Technology and Research (A\*STAR) and STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, announced the start of a Research & Development (R&D) collaboration in the field of silicon carbide (SiC) for power-electronics applications in the automotive and industrial markets. The collaboration sets a foundation for a comprehensive SiC ecosystem in Singapore and creates opportunities for other companies to engage with IME and ST in SiC research.

SiC solutions can outperform conventional silicon (Si) devices in power electronics for Electric Vehicles (EVs) and industrial applications to meet the need for power modules with smaller form factors or higher power outputs, as well as higher temperature operation. Under this research collaboration, A\*STAR's IME and STMicroelectronics aim to develop and optimize SiC integrated devices and package modules to offer significantly better performance in next-generation power electronics.

*"We are pleased to collaborate with STMicroelectronics to develop breakthrough technologies that meet the needs of the growing electric vehicles market. Such efforts will continue to anchor high-value R&D activities in Singapore and bolster its reputation as an attractive regional hub for research, innovation and enterprise,"* said Prof Dim-Lee Kwong, Executive Director of IME.

*"This new collaboration with IME encourages the growth of a silicon carbide ecosystem in Singapore, as we ramp up our manufacturing activities there in addition to Catania (Italy). The multi-year collaborative effort helps us scale up our global R&D effort across our existing programs managed out of Catania and Norrköping (Sweden), covering the entire SiC value chain,"* said Edoardo Merli, Power Transistor Macro-Division General Manager and Group Vice President of STMicroelectronics Automotive and Discrete Group. *"IME's strong knowledge and expertise in wide bandgap materials, and notably SiC, supports us in accelerating the development of new technologies and products addressing the challenges of sustainable mobility and better energy efficiency in a wide spectrum of applications."*

### **Note to editors**

Power electronics involves the control and conversion of electricity using electronic devices. While silicon-based devices are predominantly used in today's power electronics, next-generation power electronics are expected to be based on Wide-Bandgap materials like silicon carbide (SiC) owing to its better characteristics for power conversion. With higher energy efficiencies and smaller form factors, SiC power devices can yield energy savings in several key

systems inside EVs such as the traction inverter (the “engine” of an EV), on-board chargers and DC-DC converters (which power headlights, interior lights, wiper and window motors, fans, pumps, and many other systems from the main high-power source, after conversion to a lower voltage).

**For more information:**

<https://www.a-star.edu.sg/ime/Research/power-electronics>

[https://www.st.com/content/st\\_com/en/about/innovation---technology/SiC.html](https://www.st.com/content/st_com/en/about/innovation---technology/SiC.html)

**About the 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 on IME, please visit [www.a-star.edu.sg/ime](http://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](http://www.a-star.edu.sg).

**About STMicroelectronics**

At ST, we are 46,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An independent device manufacturer, we work with more than 100,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and 5G technology. Further information can be found at [www.st.com](http://www.st.com).

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