

## A\*STAR'S INSTITUTE OF MICROELECTRONICS AND SOITEC TO DEVELOP NEXT-GENERATION SILICON CARBIDE SEMICONDUCTORS

**Singapore, 10<sup>th</sup> January 2022** –The Institute of Microelectronics (IME) at the Agency for Science, Technology and Research (A\*STAR) and Soitec (Euronext Paris) have announced a research collaboration to develop next-generation silicon carbide (SiC) semiconductor devices to power electric vehicles and advanced high-voltage electronic devices. Under the collaboration, the parties will leverage Soitec's proprietary technologies such as Smart Cut™ and IME's pilot production line to create 200 mm diameter SiC semiconductor substrates.

The joint research will contribute towards developing a holistic SiC ecosystem and boosts semiconductor manufacturing capabilities in Singapore and the region. The research collaboration is planned to run until mid-2024, and aims to achieve the following outcomes:

- Develop SiC epitaxy and metal–oxide–semiconductor field-effect transistor (MOSFET) fabrication processes for Smart Cut™ SiC substrates to produce higher quality microchip transistors with less defects and enhanced yield during the manufacturing process
- Establish a benchmark for SiC power MOSFET devices fabricated on Smart Cut™ SiC substrates and demonstrate the advantages of the process with conventional bulk substrates

*“This joint research between A\*STAR’s Institute of Microelectronics and Soitec to develop next-generation semiconductor devices using innovative technologies is made possible by both organisations’ deep capabilities in R&D,”* said **Mr. Terence Gan, Executive Director of IME**. *“We look forward to working together with Soitec to add value to the local R&D ecosystem and the growing pool of silicon carbide players in the semiconductor industry,”* he added.

*“This is a great opportunity for us to partner with Singapore’s Institute of Microelectronics and demonstrate SmartSiC substrate’s scalability to 200mm,”* said **Christophe Maleville, Chief Technology Officer and Senior Executive VP at Soitec**. *“The collaboration paves the way for the development of advanced epitaxy solutions to produce higher quality SiC wafers with energy-efficient characteristics, given the exciting potential of this material. As the main beneficiaries of this new process, the semiconductor ecosystem in Singapore will be given the opportunity to validate the superior energy efficiency of the SiC wafers produced through our collaboration.”*

Soitec is a global leader in designing and manufacturing innovative semiconductor materials, headquartered in France. The company's products are used to manufacture chips that go into smart phones, tablets, computers, IT servers and data centers as well as electronic components in cars, connected devices, and industrial and medical equipment.

A\*STAR's IME has capabilities in Heterogeneous Integration, System-in-Package, Sensor, Actuators and Microsystems, RF & mmWave, SiC/GaN-on-SiC Power Electronics, and MedTech. The 8-inch SiC pilot line it is establishing aims to validate 8-inch manufacturing processes and tools on a pilot line scale before a transition can be made to 8-inch high-volume manufacturing. A dual purpose of this programme is to perform applied R&D on innovative SiC MOSFET processes and materials like Soitec's Smart Cut™ SiC substrates to pre-position the industry for next-generation SiC manufacturing.

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### **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/ime](http://www.a-star.edu.sg/ime).

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### **About Soitec**

Soitec (Euronext, Tech 40 Paris) is a world leader in designing and manufacturing innovative semiconductor materials. The company uses its unique technologies and semiconductor expertise to serve the electronics markets. With more than 3,500

patents worldwide, Soitec's strategy is based on disruptive innovation to answer its customers' needs for high performance, energy efficiency and cost competitiveness. Soitec has manufacturing facilities, R&D centers and offices in Europe, the U.S. and Asia. Fully committed to sustainable development, Soitec adopted in 2021 its corporate purpose to reflect its engagements: "*We are the innovative soil from which smart and energy efficient electronics grow into amazing and sustainable life experiences.* »

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*Soitec is a French joint-stock corporation with a Board of Directors (Société Anonyme à Conseil d'administration) with a share capital of € 70,276,054.00, having its registered office located at Parc Technologique des Fontaines - Chemin des Franques - 38190 Bernin (France), and registered with the Grenoble Trade and Companies Register under number 384 711 909.*

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