



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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Join the SOI community to engage on the topic of **SOI: DEVELOPING APPLICATIONS WITH IMPROVED PERFORMANCE** – focused on the Automotive sector – at SEMICON Europa, November 16. [Learn more here](#)

FEATURED IN THIS EDITION

100 GBPS PAM4 ULTRA-THIN PHOTODETECTORS INTEGRATED ON SOI PLATFORM BY MICRO TRANSFER PRINTING

The integration of compact high-bandwidth III-V active devices in a scalable manner is highly significant for Silicon-on-insulator (SOI) photonic integrated circuits. This paper demonstrates the integration of pre-fabricated $21 \times 57 \mu\text{m}^2$ InGaAs photodetector (PD) coupons with a thickness of 675 nm to a 500 nm SOI platform using a direct bonding micro-transfer printing process.

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LATERAL TUNNEL EPITAXY OF GAAS IN LITHOGRAPHICALLY DEFINED CAVITIES ON 220 NM SILICON-ON-INSULATOR

Current heterogeneous Si photonics usually bond III–V wafers/dies on a silicon-on-insulator (SOI) substrate in a back-end process, whereas monolithic integration by direct epitaxy could benefit from a front-end process. Without relying on thick, defective buffer layers, this study demonstrates the potential of in-plane co-integration of III–Vs with Si on mainstream 220 nm SOI platform.

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CURVED INGAAS NANOWIRE ARRAY LASERS GROWN DIRECTLY ON SILICON-ON-INSULATOR

A new type of photonic crystal laser with a curved cavity formed by InGaAs nanowires grown directly on silicon-on-insulator (SOI) is presented here. The results highlight the potential of using nanowires for ultra-compact photonic crystal lasers with novel geometries.

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SHANGHAI INSTITUTE OF MICROSYSTEMS ACHIEVES BREAKTHROUGH IN 300MM SOI WAFER MANUFACTURING TECHNOLOGY

The research team of the Shanghai Institute of Microsystems has made breakthrough progress in 300 mm SOI wafer manufacturing technology and produced China's first 300 mm radio frequency (RF) SOI wafer. This is considered to have achieved a major breakthrough in China's 300mm SOI manufacturing technology from scratch.

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SOI ECOSYSTEM NEWS

TIANCHUN YE: FD-SOI BRINGS NEW MARKETS AND NEW OPPORTUNITIES TO CHINA

At the 8th Shanghai FD-SOI Forum, Tianchun YE, Secretary General of China Integrated Circuit Innovation Alliance, delivered a speech and said that FD-SOI brings new opportunities and development space to China, and promoting the development of the FD-SOI ecosystem requires more chip design companies and application manufacturers to join.

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INFINEON, HYUNDAI MOTOR, AND KIA SIGN MULTI-YEAR SUPPLY AGREEMENT FOR POWER SEMICONDUCTORS

Infineon will build and reserve manufacturing capacity to supply SiC as well as Si power modules and chips to Hyundai/Kia until 2030. Hyundai/Kia will support the capacity build-up and capacity reservation with financial contributions.

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X-FAB SET TO RECEIVE FUNDING FROM THE EUROPEAN IPCEI ME/CT FOR SEMICONDUCTOR TECHNOLOGY INNOVATION

The funding will span across three of X-FAB's sites. The Corbeil-Essonnes facility in France specializes in smart sensors and drivers, new architectures, photonics and RF technologies. The Erfurt site in Germany researches and develops manufacturing platforms for smart integrated sensor systems. And the Itzehoe site in Germany where focuses on the development and implementation of new methods for processing glass wafers.

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DESIGN OF A HIGH-SENSITIVITY POLYMER DOUBLE-SLOT WAVEGUIDE SENSOR FOR POINT-OF-CARE BIOMEDICAL APPLICATIONS

Silicon photonics is a rapidly developing field that offers cost-effective biosensors with improved sensitivity and the potential for interconnecting with other electronic devices for instant disease diagnosis. This study designs a silicon-polymer double-slot waveguide-based MZI, with a small mode area and a large evanescent field to enhance light-analyte interaction.

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SEMI BLOG

BOOSTING SEMICONDUCTOR PERFORMANCE WITH QUANTUM-ENGINEERED MATERIALS

In welcoming Atomera as the newest member of the ESD Alliance, Robert (Bob) Smith, executive director of the ESD Alliance, spoke with Atomera CEO Scott Bibaud to learn more about its atomic-level technology that enhances transistors to improve performance in electronic products. Quantum-engineered materials and their impact on chip performance, recruiting and industry trends were also discussed.

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SEMI NEWS HIGHLIGHT

CELEBRATING COMPANIES OBSERVING SEMI MEMBERSHIP MILESTONES IN Q3 2023

Each quarter SEMI recognizes the longstanding commitment and support of member companies as they reach a new membership milestone. Connecting the entire electronics manufacturing and design supply chain to help drive innovation and industry growth would not be possible without the continued partnerships and achievements of SEMI members.

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