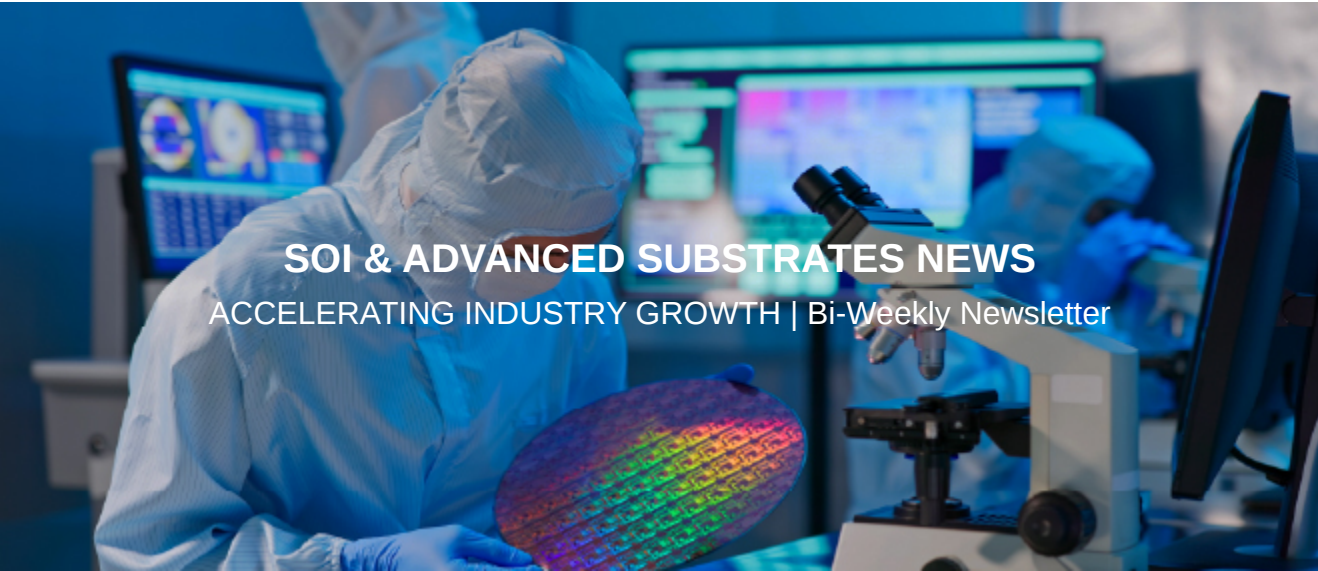




SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

Share 

FEATURED IN THIS EDITION

CRYO-CMOS MULTIPLEXING FOR QUANTUM SPIN QUBITS

It is reported that researchers at VTT in Finland have developed a 64 channel on-chip multiplexer for quantum spin qubits. The chip is built on a custom silicon on insulator (SOI) process with an all-silicon gate stack and 50nm gate width.

[Read More](#)

ASYNCHRONOUS INTERFACE CIRCUIT FOR NONLINEAR CONNECTIVITY IN MULTICORE SPIKING NEURAL NETWORKS

An interface circuit that supports multiple SNN cores was designed with full-custom methods for optimizing all the routing paths and fabricated in a 28-nm CMOS FDSOI process. The proposed interface circuit may enable SNNs to be scaled up to large networks with high speed and low energy consumption.

[Read More](#)

ULTRAFAST PULSE PROPAGATION TIME-DOMAIN DYNAMICS IN DISPERSIVE ONE-DIMENSIONAL PHOTONIC WAVEGUIDES

A design methodology for ultrafast pulse propagation in dispersive integrated waveguides was proposed, aiming to determine the optimal structural parameters for achieving maximum peak power, enhanced temporal resolution, and extended pulse storage duration during ultrafast pulse propagation. To validate this approach, two specialized one-dimensional grating waveguides on a SOI platform were designed and fabricated.

[Read More](#)

DEMONSTRATION OF ENTANGLEMENT DISTRIBUTION OVER 155 KM METROPOLITAN FIBER USING A SILICON NANOPHOTONIC CHIP

Transmitting an entangled state over an extended distance is crucial for the development of quantum networks. Research found that SOI nanophotonic chips can perform competitively with bulk crystal sources and represent an important step toward building quantum networks using integrated nanophotonic platforms.

[Read More](#)

SOI ECOSYSTEM NEWS

INFINEON COMBINES SILICON AND SILICON CARBIDE IN A CUTTING-EDGE POWER MODULE FOR E-MOBILITY

The HybridPACK Drive G2 Fusion is the first plug'n'play power module that implements a combination of Infineon's silicon and silicon carbide (SiC) technologies. This cutting-edge solution provides an ideal balance between performance and cost efficiency, giving more choice in the optimization of inverters.

[Read More](#)

TDK DEVELOPS WORLD'S FIRST FULL-COLOR LASER CONTROL DEVICE FOR 4K SMART GLASSES

The most significant feature of the smart glasses is the use of lithium niobate (LiNbO3) thin film enabling visible light control at speeds more than 10 times faster than conventional laser color control. As a result, it supports video resolutions of 4K or higher, which require high-speed control, while power consumption is expected to decrease.

[Read More](#)

ULTRA-HIGH BRIGHTNESS MICRO-LEDS WITH WAFER-SCALE UNIFORM GAN-ON-SILICON EPILAYERS

Gallium nitride (GaN) based Micro-LEDs are considered revolutionary display technology and have important application prospects in the fields of micro-display and virtual display. In this work, researchers reported high-brightness green Micro-displays with a 5 µm pixel utilizing high-quality GaN-on-Si epilayers.

[Read More](#)

MONOLAYER MOS2 CVD-GROWTH ON SIC SUBSTRATES ASSISTED WITH KCL

This study examines the growth of molybdenum disulfide (MoS2) on semi-insulating silicon carbide (Si-6H-SiC) substrates using chemical vapor deposition (CVD). The findings highlight the potential of MoS2 grown on Si-6H-SiC substrates, particularly with potassium chloride (KCl) modification, for advanced electronic applications, paving the way for further exploration and optimization of 2D material-based technologies.

[Read More](#)

COMPOUND SEMICONDUCTOR

WOLFSPEED SECURES US\$750 MILLION FUNDING FOR US SIC PRODUCTION EXPANSION

The funding will support Wolfspeed's US\$6 billion expansion plan, which includes building a new SiC wafer facility in North Carolina and increasing its manufacturing capacity in New York. Wolfspeed's planned Siler City, North Carolina, plant will be the largest SiC wafer facility in the US and the world's first high-capacity, 8-inch SiC wafer site.

[Read More](#)

BMS TAPS 100V BI-DIRECTIONAL GAN TECHNOLOGY

Chinese power chip maker Innoscience Technology has launched, a new generation of battery management system (BMS) designs based on 100V bidirectional gallium nitride (GaN) technology. With no parasitic body diode and bidirectional control, one bi-directional GaN device can effectively replace two traditional MOS Silicon pairs in Over Voltage Protection (OVP) and industrial BMS applications under 100V.

[Read More](#)

DOE FUNDS ALSCN RESEARCH

The US Department of Energy has awarded just under \$975,000 to Charles Paillard, a University of Arkansas research professor of physics and director of the Smart Ferroic Materials Center, to study AIScN – a wide-band gap compound semiconductor with ferroelectric properties.

[Read More](#)

ATOMERA/SANDIA PROJECT TO ADDRESS GAN/SI CHALLENGES

The project, which is a collaboration with the Centre for Integrated Nanotechnologies (CINT) at Sandia, aims to create the world's first GaN transistors and test data from wafers employing Atomera's Mears Silicon Technology (MST). The effort will build upon improvements already observed at the materials level in GaN/MST on silicon wafers.

[Read More](#)

SEMI BLOG

INSIGHTS FROM MERCK: DIGITALIZATION OF CHEMICAL PROCESS DESIGN FOR SEMICONDUCTOR MATERIALS MANUFACTURING

The drive to scale nodes towards physical limits, known as "More than Moore," and the adoption of 3D architecture in chip integration strategies for advanced logic and memory applications has led to unprecedented demand for high-quality dependable materials solutions. SEMI spoke with Thorsten vom Stein, Director, Head of Process Design Semiconductor Materials at Merck, about how materials innovations and advanced packaging can contribute to smarter supply chain solutions for a sustainable ecosystem.

[Read More](#)

SEMI NEWS HIGHLIGHT

ESD INDUSTRY POSTS \$4.7 BILLION IN REVENUE IN Q2 2024

Electronic System Design (ESD) industry revenue increased 18.2% to \$4,685.5 million in the second quarter of 2024 from the \$3,962.7 million registered in the second quarter of 2023, according to ESD Alliance's latest Electronic Design Market Data (EDMD) report. The four-quarter moving average, which compares the most recent four quarters to the prior four, rose 18%.

[Read More](#)

EVENTS



Thank you for reading this newsletter. For feedback, please email hhoffman@semi.org.

Subscribe