



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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NEW CHIP TECHNOLOGY TO ENHANCE ENERGY EFFICIENCY OF AI-CONNECTED DEVICES

Researchers from NUS, together with industry partners Soitec and NXP Semiconductors, have demonstrated a new class of silicon systems. This innovation has been demonstrated in fully-depleted silicon-on-insulator (**FD-SOI**) technology, and can be applied to the design and fabrication of advanced semiconductor components for AI applications.

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LOW POWER NANOSCALE S-FED BASED SINGLE ENDED SENSE AMPLIFIER APPLIED IN INTEGRATE AND FIRE NEURON CIRCUIT

Sense amplifier is an important element for the implementation of a neuromorphic circuit. In this paper, a novel sense amplifier was successfully designed based on a nanoscale silicon-on-insulator (**SOI**) side-contacted field-effect diode (S-FED) device with low power consumption and a minor output voltage deviation.

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COMPACT LOW LOSS RIBBED ASYMMETRIC MULTIMODE INTERFERENCE POWER SPLITTER

Optical power splitters are utilized extensively in integrated photonic circuits, drawing significant interest in research on power splitters with adjustable splitting ratios. This paper introduces a compact, low-loss 1×2 asymmetric multimode interferometric optical power splitter on a silicon-on-insulator (**SOI**) platform.

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ANTI-RESONANT ACOUSTIC WAVEGUIDES ENABLED TAILORABLE BRILLOUIN SCATTERING ON CHIP

Inspired by the optical anti-resonance in hollow-core fibers and acoustic anti-resonance in cylindrical waveguides, researchers proposed suspended anti-resonant acoustic waveguides (SARAWs) with superior confinement and high selectivity of acoustic modes, supporting both forward and backward Brillouin scattering on chip. The SARAW was fabricated from the 220 nm silicon layer of a **SOI** wafer.

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SOI ECOSYSTEM NEWS

X-FAB ENHANCES ITS 180NM AUTOMOTIVE-GRADE HIGH-VOLTAGE CMOS FOUNDRY SOLUTION

The XP018 platform is a modular 180nm high-voltage EPI technology solution, based on a low mask count 5V single-gate core module. It supports an extended temperature range of -40 to 175°C and offers a wide range of optional devices and modules.

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IMEC.XPAND LAUNCHES A €300M SEMICONDUCTOR-FOCUSED FUND

imec.xpand is a fund specializing in startups in the semiconductor and nanotechnology sectors, whatever their stage of development. Over the years, imec.xpand has focused on core technologies such as AI, ML, AR/VR and photonics with investments in companies such as Celestial AI, Axelera and Swave Photonics.

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HIGH-SPEED ELECTRO-OPTIC MODULATORS BASED ON THIN-FILM LITHIUM NIOBATE

Despite its recent introduction, commercial thin-film lithium niobate (LN) wafers already rival or surpass established alternatives like silicon and indium phosphide, benefitting from decades of research. This review provides an in-depth look at the foundational principles and technical innovations driving state-of-the-art LN modulator demonstrations, exploring various methodologies, their strengths, and challenges.

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ENHANCING MODULATION PERFORMANCE BY DESIGN OF HYBRID PLASMONIC OPTICAL MODULATOR INTEGRATING MULTI-LAYER GRAPHENE AND TiO2 ON SILICON WAVEGUIDES

A new design is proposed and a simulation presented of multi-layer graphene on a titanium dioxide (TiO2) substrate in an hybrid plasmonic waveguide structure to enhance the modulation depth. This may offer a promising pathway for realization of next-generation high-speed, low-power optical communication systems.

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COMPOUND SEMICONDUCTOR

INFINEON SUPPLIES SIC POWER MODULES TO XIAOMI NEW SU7 SMART EV

Infineon Technologies has been selected to supply silicon carbide (SiC) power modules to Xiaomi EV for their newly unveiled SU7 model until 2027. Additionally, the two firms have reached an agreement to enhance collaboration on SiC automotive applications in order to maximize the advantages offered by Infineon's SiC portfolio.

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CARDIFF UNIVERSITY TO LEAD A NEW COMPOUND SEMICONDUCTOR MANUFACTURING HUB

A key driver for the hub will be to expand the environmental benefits of compound semiconductors, by carrying out their research in an environmentally friendly way, developing new manufacturing processes and creating new devices that are energy efficient along the way.

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EPITAXIAL GROWTH OF HIGH-QUALITY GAN WITH A HIGH GROWTH RATE AT LOW TEMPERATURES BY RADICAL-ENHANCED METALORGANIC CHEMICAL VAPOR DEPOSITION

In this study, researchers have grown gallium nitride (GaN) on bulk GaN and GaN on Si templates using a recently developed radical-enhanced metalorganic chemical vapor deposition (REMOCVD) technique, and found that it is very effective to grow these nitrides at much lower temperatures than those of the metalorganic chemical vapor deposition (MOCVD) method.

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SCALING PHOTONIC INTEGRATED CIRCUITS WITH INP TECHNOLOGY: A PERSPECTIVE

Indium phosphide offers the richest possible combinations of active components, but in the past decade, their pace of integration scaling has not kept up with passive components realized in silicon. This study offers a perspective for functional scaling of photonic integrated circuits with actives and passives on InP platforms.

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SEMI BLOG

SPARKING CLIMATE ACTION: INDUSTRY LEADERS GATHER FOR SEMI EARTH MONTH LIGHTNING TALKS

In the age of rapidly advancing technology and global connectivity, it's essential to recognize the impact of our actions on the planet. In this spirit, the Climate Equity and Social Impact (CESI) working group, part of the SEMI Sustainability Initiative, last month hosted the semiconductor industry's first webinar devoted to employee-driven sustainability projects. The event drew nearly 200 attendees to listen to speakers from seven CESI member companies – Advantest, ASML, DuPont, Entegris, Lam Research, NXP, Tokyo Electron – deliver Lightning Talks.

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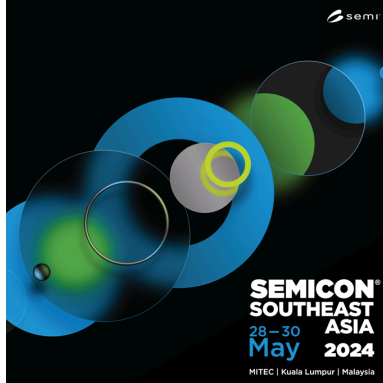
SEMI NEWS HIGHLIGHT

EUROPEAN CHIPS SKILLS ACADEMY LAUNCHES SUMMER SCHOOL IN ITALY TO PROMOTE MICROELECTRONICS INDUSTRY CAREERS

University students will connect with professors to explore semiconductor learning paths and employment opportunities at the European Chip Skills Academy Summer School, August 18-23, 2024 in Bologna, Italy. Supported by SEMI and held in collaboration with AENEAS, EPoSS, and Inside, the event is integral to the European Chips Skills Academy, an EU-funded project coordinated by SEMI Europe. The event will be held at the University Residential Centre, University of Bologna, Bertinoro, Italy. Registration is open.

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