



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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TOWARDS HIGH QUALITY TRANSFERRED BARIUM TITANATE FERROELECTRIC HYBRID INTEGRATED MODULATOR ON SILICON

A team of researchers have proposed a new way to transfer barium titanate onto silicon. This study demonstrated electro-optical modulation using the hybrid integration of barium titanate on a silicon-on-insulator (SOI) waveguide structure enabled by the target transfer method.

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DESIGN OF A NOVEL HIGH-SENSITIVE SOI-JUNCTIONLESS BIOFET OVERCOMING SENSITIVITY DEGRADATION PROBLEMS

To utilize the advantages of the silicon-on-insulator (SOI) technology and junctionless based transistors along with keeping the scalability benefits, in this report an interesting modification has been performed on the biosensor by transferring the nanocavity from the gate dielectric to the channel region.

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INVERSE-DESIGNED INTEGRATED BIOSENSORS

This study proposes a refractive index sensor in a silicon-on-insulator (SOI) platform inspired by the operation of multimode fiber sensors. The sensor utilizes an optimized SOI resonator through adjoint-based inverse design topology optimization.

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DESIGN OF ULTRA-COMPACT AND MULTIFUNCTIONAL OPTICAL LOGIC GATE BASED ON SB2SE3-SOI HYBRID PLATFORM

Optical logic devices are essential functional devices for achieving optical signal processing. In this study, researchers design an ultra-compact reconfigurable optical logic gate by using inverse design method with direct binary search algorithm based on Sb2Se3-SOI integrated platform.

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SOI ECOSYSTEM NEWS

NAVITAS POWERS EXPANDED SAMSUNG GALAXY SMARTPHONE PORTFOLIO

Navitas announced that Samsung had expanded adoption of Navitas' GaNFast ICs from the original flagship Galaxy S22, S23 and S24 to the mainstream Galaxy A, and revolutionary Galaxy Z Fold6 and Galaxy Z Flip6 smartphones with enhanced Galaxy AI features.

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INDISTINGUISHABLE PHOTONS FROM AN ARTIFICIAL ATOM IN SILICON PHOTONICS

The lack of deterministic quantum light sources and strong photon-photon interactions in silicon poses a challenge to scalability. In this work, researchers show that a G center in a silicon waveguide can generate high-purity telecom-band single photons.

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TI TO RECEIVE UP TO \$8BN IN US CHIPS ACT FUNDS

The funding for the TI fabs in Sherman, Texas and Lehi, Utah, 300mm fabs would also include \$6bn to \$8bn in investment tax credit to drive internal production to 95% by 2030 through \$18bn of investment. The company is also bringing much of its test and assembly in house in Malaysia.

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ADVANCEMENTS IN CMOS-COMPATIBLE SILICON NITRIDE OPTICAL MODULATORS VIA THIN-FILM CRYSTALLINE OR AMORPHOUS SILICON P-N JUNCTIONS

As the demand for ever-increasing data rates and bandwidths continues to escalate, SiN photonics modulators present a different approach compared with other active materials platforms. The electro-optical modulators for SiN photonics proposed in this paper introduce a complementary approach utilizing a thin film of amorphous or crystalline silicon p-n junction on top or under the silicon nitride WG.

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COMPOUND SEMICONDUCTOR

INFINEON OPENS THE WORLD'S LARGEST AND MOST EFFICIENT SiC POWER SEMICONDUCTOR FAB IN MALAYSIA

The first phase of the fab will focus on the production of silicon carbide (SiC) power semiconductors and will include gallium nitride (GaN) epitaxy. The second phase will create the world's largest and most efficient 200-millimeter SiC power fab.

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NEW SEMICONDUCTOR MATERIAL ALYN PROMISES MORE ENERGY-EFFICIENT AND POWERFUL ELECTRONICS

Researchers at the Fraunhofer Institute for Applied Solid State Physics IAF have succeeded in fabricating Aluminum yttrium nitride (AlYN) using metal-organic chemical vapor deposition (MOCVD) technology, enabling the development of new, diverse applications.

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ANKER PRIME GAN 250W CHARGER HAS SIX USB PORTS

The Anker company presented a new Prime charger, made using gallium nitride (GaN) technology and having a total power of 250 W. The device is currently available in select markets, including the US and the UK.

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MICROSCOPIC MECHANISMS OF NITROGEN DOPING IN SILICON CARBIDE DURING EPITAXIAL GROWTH

This study reports first-principles calculations that unveil elementary processes of nitrogen donor doping during epitaxial growth of silicon carbide (SiC). The calculated energy barriers indicate that the N incorporation reactions at the step edges occur at a typically high temperature in SiC epitaxial growth.

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SEMI BLOG

LOOKING AT THE EVOLUTION OF THE SEMICONDUCTOR IP MARKET WITH EXECUTIVE ADVISOR JEFF LEWIS

In the '90s, EDAC wasn't interested in tracking IP. As the IP market started growing, EDAC was all over it because it helped pump up the size of the electronic design automation (EDA) industry. Suddenly, IP had become a big enough industry that people were starting to care. In this blog, Executive Advisor Jeff Lewis, VP of Marketing and Business Development for Artisan Components, shared with us what he remembers from the early days of IP.

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SEMI NEWS HIGHLIGHT

SEMI ENERGY COLLABORATIVE RELEASES ANALYSIS AND RECOMMENDATIONS FOR INCREASING SUPPLY OF LOW CARBON ENERGY IN SOUTH KOREA

To help the global semiconductor value chain lower greenhouse gas (GHG) emissions, SEMI released its first region-specific analysis of current and forecasted low-carbon energy (LCE) markets for South Korea. Developed by the SEMI Energy Collaborative (EC) and its sponsors, with insights from partner organizations and the South Korean government, the report highlights investments and policy changes required to increase supply of LCE.

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