



SOI & ADVANCED SUBSTRATES NEWS

ACCELERATING INDUSTRY GROWTH | Bi-Weekly Newsletter

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Mark your calendars for the return of the popular Shanghai SOI Workshop & Forum covering both FD-SOI and RF-SOI, hosted by Simgui and Verisilicon, and supported by SEMI SOIIC – October 23-24, 2023 at the Pudong Shangri-La Hotel. More information to come!

FEATURED IN THIS EDITION

AN EFFICIENT SILICON GRATING COUPLER FOR A 2 MM WAVEBAND BASED ON A POLYSILICON OVERLAY

The short-wavelength mid-infrared spectral range of the 2 μm waveband has the advantages of low transmission loss and broad gain bandwidth, making it a promising candidate for the next optical fiber communication window. Here an efficient dual-layer grating coupler was designed on a 220 nm thick silicon-on-insulator (SOI) based on raised polysilicon to address the low directionality issue.

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SINGLE EVENT UPSET STUDY OF 22 NM FULLY DEPLETED SILICON-ON-INSULATOR STATIC RANDOM ACCESS MEMORY WITH CHARGE SHARING EFFECT

As a storage circuit, static random access memory (SRAM) has been widely used in the field of integrated circuits due to its advantages of fast speed and stable operation. Here the single event effect of 6T-SRAM is simulated at circuit level and device level based on a 22 nm fully depleted silicon-on-insulator (FDSOI) process.

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PREPARATION OF THIN-FILM SOI WAFER BY LOW-DOSE ION IMPLANTATION

The effects of different types of silicon wafers and different implantation doses on SOI surface defects, top Si thickness, buried oxide (BOX) layer thickness, BOX layer breakdown voltage, and top Si defect density were investigated in this paper. Ultra-thin SOI wafers are prepared by epitaxial silicon wafers and control the first implantation dose.

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HIGH-FIDELITY MODE SCALING VIA TOPOLOGICAL-OPTIMIZED ON-CHIP METALENS FOR COMPACT PHOTONIC INTERCONNECTION

Owing to the various dimensions of different integrated photonic devices, their interconnections typically require waveguide tapers. This study proposes a highly integrated on-chip metalens that enables optical interconnections between devices with high width-scaling ratios by embedding a free-form metasurface in a silicon-on-insulator (SOI) film.

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SOI ECOSYSTEM NEWS

MOOV EXPANDS PRESENCE IN TAIPEI

Moov, the largest and fastest growing global marketplace for used semiconductor equipment, announced it will be expanding its presence in Taipei with a new office located in Taipei and dedicated staff on the ground.

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GAN SYSTEMS AND ACEPOWER PARTNER TO PROPEL GAN ADOPTION IN CHINESE ELECTRIC VEHICLE MARKET

GaN Systems has announced a partnership with ACEpower, a leading developer of power supply and EV charging solutions for the Chinese market, to accelerate the adoption of GaN power systems in the Chinese EV market.

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HYBRID SILICON NITRIDE PHOTONIC INTEGRATED CIRCUITS COVERED BY SINGLE-WALLED CARBON NANOTUBE FILMS

The integration of low-dimensional materials with optical waveguides presents promising opportunities for enhancing light manipulation in passive photonic circuits. This study investigates the potential of aerosol-synthesized single-walled carbon nanotube (SWCNT) films for silicon nitride photonic circuits as a basis for developing integrated optics devices.

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POLYCRYSTALLINE TRANSPARENT AL-DOPED ZNO THIN FILMS FOR PHOTSENSITIVITY AND OPTOELECTRONIC APPLICATIONS

Due to the low cost, stability, good optical and electrical properties, Al-doped ZnO films can be an excellent replacement for ITO. This article reports on the morphological, phase, optical and photosensitive properties of thin Al-doped ZnO films with a content of 1–10 at.% Al obtained by solid-phase pyrolysis at 700 °C.

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SEMI NEWS HIGHLIGHT

FLEX 2023 TAKEAWAYS: FLEXIBLE AND PRINTED ELECTRONICS MOVE INTO ELECTRONICS MANUFACTURING

The FLEX Conference this year provided numerous examples of continued developments in flexible, printed, and flexible hybrid electronics technologies applied to sensing, robotics, communications, and other applications. At the same time, there is growing focus on applying various additive manufacturing equipment, materials, and processes to solving the challenges of heterogenous integration and other forms of advanced packaging adopted by the semiconductor industry.

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BALANCING CHIP INDUSTRY GROWTH AND ENVIRONMENTAL SUSTAINABILITY – SEMICON WEST 2023 PANEL DISCUSSION

At SEMICON West 2023, a panel of experts discussed the growing legal and regulatory risks facing the semiconductor industry and how to navigate those risks through the pursuit of sustainability strategies and broader industry collaboration on policy development. The panel concluded by proposing a call to action for the semiconductor industry to develop a comprehensive, integrated policy proposal that could become the basis of a new regulatory framework for the industry.

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EVENTS



DYNAMIC CONTROL OF ALD FILMS FOR FAST & EFFICIENT MEMS MANUFACTURING

Date: October 11, 2023
Location: Virtual

In this webinar, Forge Nano will present how to use Atomic Layer Deposition (ALD) to tune a few different thin film properties such as electrical barrier performance, gas diffusion barrier behavior, and internal film stress. This approach overcomes the perception of ALD as a barrier to high-volume manufacturing and as a material intensive process. Join Paul Carey and Matt Weimer of Forge Nano to explore a new approach.

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ADVANCED PACKAGING SUMMIT 2023

Date: Sept 5, 2023
Location: Suwon Convention Center, South Korea

The summit brings together leading experts, researchers, and industry professionals to share their insights and experiences on advanced packaging solutions that enable high-density, high-bandwidth, and low-latency interconnects for HPC systems.

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SEMICON TAIWAN 2023

Date: Sept 6 – 8, 2023
Location: TaiNEX 1&2 Taipei, Taiwan

With the key focus of "Inspire Innovation. Empower Sustainability.", the exhibition will gather more participants from major companies than ever before, including 850 exhibitors, covering 3,000 booths, and attracting over 50,000 visitors!

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