

# Optoelectronic Fusion Integration and Communication Sensing



## Overview

Accordingly, this Special Issue aims to present research papers, communications, and review articles focusing on heterogeneous multi-dimensional fusion integration, optoelectronic fusion collaborative simulation analysis, high-quality optoelectronic chip. Accordingly, this Special Issue aims to present research papers, communications, and review articles focusing on heterogeneous multi-dimensional fusion integration, optoelectronic fusion collaborative simulation analysis, high-quality optoelectronic chip. Integrating microelectronics and optoelectronics can harness the mature processes and functions of microelectronics, with the ultra-wideband and low-power benefits of optoelectronics. This integration addresses challenges like high-speed, low-power consumption and intelligence, driving the. Yunfeng Wen and Fang Yang are with the Department of Electronic Engineering, Tsinghua University, Beijing 100084, P. China (e-mail: . In the ever-evolving domain of optoelectronics, the longstanding reliance on bulk three-dimensional semiconductors—such as silicon, germanium, and III-V compounds—is confronting fundamental physical constraints. These classical materials, which have underpinned solar cells and high-speed.

## Article Content

### Optical Integrated Sensing and Communication ...

In this article, we first introduce the generalized system structure of O-ISAC, and then elaborate on three advantages of O-ISAC, i.e., increasing communication rate, enhancing sensing precision, and ...

### Optoelectronic integrated sensing and communication system based ...

In this work, we propose an optoelectronic integrated sensing and communication system based on InGaN/GaN MQW integrated transceiver chip for wireless air pressure detection.

### 3D Integration of functionally diverse 2D materials for ...

Recent years have seen remarkable progress in three-dimensional (3D) integration of non-silicon materials, enabling the convergence of diverse ...

### Advancing Photodetection and Intelligent Sensing Through Band and

This broadband sensitivity enables novel functionalities, including thermal and chemical signature detection, in a compact, chip-integrated format. Such spectral versatility is critical for ...

### Optical Integrated Sensing and Communication: From Theory to Practice

Integrated sensing and communication (ISAC) technology enables simultaneous sensing and communication functions through shared hardware and resources tailored to specific applications. ...

### GaN Optoelectronic Integrated Chip with Multifunctions of ...

Herein, a GaN optoelectronic integrated chip with multifunctions of communication, sensing, and neuromorphic computing is proposed and fabricated on a GaN-on-Si light-emitting ...

### Micromachines | Special Issue : Optoelectronic Fusion Technology

It will allow for the multi-functional integration of communications, sensing, and computing chips, as well as optoelectronic intelligent chips, promoting innovation in ultra-broadband optical networks, satellite ...

### Solution-Processed Optoelectronic Fusion-Upconversion Devices for ...

To meet this need, we demonstrate a solution-processed optoelectronic fusion-upconversion device (OEF-UCD) that seamlessly integrates near-infrared detection with visible emission.

### Center Achieves Major Scientific Breakthrough with Ultrabroadband ...

Based on an advanced thin-film lithium niobate photonics platform, they successfully developed an ultrabroadband optoelectronic integrated chip that enables adaptive, reconfigurable, and...

Optical Integrated Sensing and Communication: Architectures, ...

In this article, we first introduce the generalized system structure of O-ISAC, and then elaborate on three advantages of O-ISAC, i.e., increasing communication rate, enhancing sensing ...

3D Integration of functionally diverse 2D materials for optoelectronic ...

Recent years have seen remarkable progress in three-dimensional (3D) integration of non-silicon materials, enabling the convergence of diverse functionalities such as sensing, storage, ...

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