Special Issue

Technologies and Applications of Semiconductor Optical Devices

Message from the Guest Editors

Microwave photonics, the synergistic integration of photonics and radio-frequency (RF) engineering, continues to revolutionize communications, sensing, radar, and signal processing. This Special Issue highlights cutting-edge research and innovations in microwave photonic devices, showcasing breakthroughs that overcome traditional electronic limitations in bandwidth, loss, and electromagnetic interference. We invite contributions focusing on novel integrated components—such as modulators, photodetectors, lasers, and signal processors—engineered for high-frequency operation, exceptional linearity, and robustness. Key themes include recent advancements in the following areas:

- Ultra-wideband optoelectronic modulators (>100 GHz);
- Low-noise photodetectors for mmWave/THz detection;
- On-chip microwave photonic filters and processors;
- Hybrid integration techniques (Si, InP, LiNbO3 platforms);
- Nonlinear photonic solutions for RF applications;
- AI-enhanced microwave photonic device control.

The scope extends to system-level applications, including 5G/6G fronthaul/backhaul, satellite networks, radar systems (e.g., optoelectronic beamformers), quantum RF sensing, and ultra-fast instrumentation.

Guest Editors

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Deadline for manuscript submissions

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Message from the Editor-in-Chief

You are invited to contribute a research article or a comprehensive review for consideration and publication in *Photonics* (ISSN 2304-6732). *Photonics* is an online open access journal covering both the fundamental and applications of optics and photonics. *Photonics* strives to provide an avenue to allow authors to disseminate their scientific findings—both theoretical/ simulations and experimental works—in highly accessible peer-reviewed journal publications. The manuscript in *Photonics* will be handled with quick turnaround production processing time. We welcome authors to submit their manuscripts for publications in *Photonics*. Our goal in *Photonics* is to enable fast dissemination of high impact works to the scientific community.

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