Special Issue

Silicon Photonics: Challenges and Future Directions

Message from the Guest Editors

Integrated photonic components, especially those built on silicon platforms, are revolutionizing optoelectronics by enabling compact, high-performance, multifunctional systems on a chip. To meet the rapidly growing demands for performance and functionality across diverse applications, silicon photonic devices are showing clear trends of dense integration and synergy with other material systems. By leveraging advanced silicon active and passive components and innovative manufacturing technologies, silicon photonics has demonstrated great potential in advancing optical communications, sensing, and emerging applications such as neuromorphic computing and quantum information processing. To showcase the latest breakthroughs in this dynamic field and foster scholarly exchange, we invite you to contribute to this Special Issue, which will compile high-quality research and review articles addressing challenges and innovations in the design, fabrication, integration, and application of silicon-based chip-scale components and systems.

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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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