Special Issue

Advanced Photonic Logic or Memory Devices for AI Computing Applications

Message from the Guest Editor

With the rapid advancement of AI, the increasing demand for computational power is outpacing the capabilities of conventional electronic systems, particularly in terms of power consumption and bandwidth. In contrast, photonic circuits offer significant advantages in these areas. To address these challenges, it is essential to develop advanced devices capable of performing logic or memory functions within the photonic domain. The purpose of this Special Issue on “Advanced Photonic Logic or Memory Devices for AI Computing Applications” is to to explore novel materials, devices, and system architectures aimed at overcoming the current power and bandwidth limitations in AI computing applications. This Special Issue welcomes the submission of both original research articles and reviews. Research areas may include (but are not limited to) the following: - Phase change materials with multiple analog states; - Non-volatile photonic devices; - Metasurfaces/metamaterials achieving logic functions; - Potential of nonlinear optics to achieve nonlinear activation functions; - Two-dimensional-material-based charge-trapping devices;

Guest Editor

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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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