Special Issue

Advances in Optical Communication and Photonic Integrated Devices

Message from the Guest Editor

Recent progress in optical communications is being driven by AI/datacenter bandwidth demands and tighter power budgets. Roadmaps are rapidly moving from 400G to 800G and 1.6T-class links, with heavy emphasis on higher-order modulation, coherent DSP, and photonic–electronic co-design to keep reach while reducing energy/bit. In parallel, co-packaged optics (CPO) and optical I/O concepts are accelerating to relieve electrical I/O bottlenecks by placing photonics closer to compute, enabling higher aggregate bandwidth and improved scaling for multi-chip systems. On the device side, silicon photonics continues to mature for high-volume interconnects, while platforms like thin-film lithium niobate and microcombs are expanding the toolbox for high-linearity modulators, dense wavelength sources, and scalable integrated systems. Security-oriented photonics is also advancing via integrated/ML-enabled encryption and optical-chaos-based communication refinements.

Guest Editor

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal *Applied Sciences* has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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