Call for Papers

Announcing an Issue of the IEEE

JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS on

3-D Horizons in Photonics: Unraveling the Next Frontier of Integrated Circuits

Submission Deadline: June 30, 2025

Hard Copy Publication: March/April 2026

The IEEE Journal of Selected Topics in Quantum Electronics (JSTQE) invites manuscript submissions in **3-D Horizons in Photonics**. The integration of photonics and electronics has forever transformed the landscape of modern technology. At the forefront of this revolution is the development of Photonic Integrated Circuits (PICs), which are swiftly emerging as the torchbearers of next-gen circuitry. Historically rooted in the traditional 2-D fabrication processes inherited from electronic ICs, PICs have begun a transformative journey toward intricate 3-D configurations. The leap from 2-D to 3-D, observed recently in electronic IC designs, isn't just a dimensional shift; it represents a paradigm change in how we conceptualize, design and deploy PICs. The ***IEEE Journal of Selected Topics in Quantum Electronics*** invites manuscript submissions in the area of **3D Photonics**. The purpose of this issue of JSTQE is to highlight the recent progress and trends in developing leading-edge 3D Photonics technologies. Areas of interest include (but are not limited to):

Advanced 3D Photonics design, methods and systems

- Layered Waveguide Structures: Utilizing multiple waveguide layers to increase the density and functionality of photonic circuits. Enabling complex routing and interconnections within a compact footprint.
- Hybrid Electronic-Photonic Integration: Merging electronic and photonic components at the chip level to enhance signal processing capabilities. Reducing latency and power consumption by leveraging the strengths of both technologies.
- Heterogeneous Integration: Combining different material systems (e.g., silicon, III-V compounds) within a single photonic chip. Enhancing device performance by integrating materials with complementary properties.

Progress in 3D Photonics, Electronics-Photonics integration, fabrication techniques and applications

- Advanced 3D Photonics Methods: Wafer-Scale Fabrication, Additive Manufacturing, Nanoimprint Lithography, Sub-Wavelength Engineering, 3D Photonic Sensors, Multi-Functional Photonic Chips, Thin film solar cells, Thermo-photovoltaics, 3D Photonic Interposers, Integrated Laser Sources, Photonic Crystals and Metasurfaces, Development of novel laser, fiber-optic and electro-optic 3D Photonics tools and devices
- Applications of Advanced 3D Photonics: Telecommunications, Data Centers, Integrated sensors, Medical Devices, Automotive chips, Renewable Energy, Artificial Intelligence chips

The Primary Guest Editor for this issue is **Prof**. **Alex Yasha Yi**, University of Michigan. The Guest Editors are: **Dr. Colin McDonough,** AIM Photonics**; Prof. Xingjun Wang,** Peking University**, Dr. James Foresi,** General Motors**; and Prof. Sarah Kurtz,** University of California, Merced

JSTQE will begin accepting submissions for this special issue on **December 1, 2024.** The deadline for submission of manuscripts is **June 30, 2025**. Hardcopy publication of the issue is scheduled for **March/April 2026.**

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For inquiries, please contact:
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Paper submission via IEEE Author Portal: https://ieee.atyponrex.com/journal/jstqe-pho

1) PDF or MS Word manuscript (double column format, up to 12 pages for an invited paper, up to 8 pages for a contributed paper). Manuscripts over the standard page limit will have an overlength charge of $220.00 per page imposed. Biographies of all authors are mandatory, photographs are optional. See the Tools for Authors link: www.ieee.org/web/publications/authors/transjnl/index.html.

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