Special Issue

Optical Communication Networks: Challenges and Opportunities

Message from the Guest Editors

Optical communication networks form the backbone of modern telecommunications, enabling high-speed data transmission over long distances with minimal loss. As demand for bandwidth-intensive applications (e.g., 5G, IoT, cloud computing, and AI) grows, optical networks face both challenges and opportunities to meet future requirements. This Special Issue will present an overview of cutting-edge research, including their aims, results, and applications. We invite the submission of broad, visionary contributions, including short research reports and collections of reviews of accomplishments. Topics include but are not limited to the following:

- AI and machine learning optimization;
- Integration with emerging technologies;
- Advanced modulation and multiplexing techniques;
- Network scalability and flexibility;
- Nonlinear compensation;
- Security vulnerabilities;
- Bandwidth and capacity improvement;
- Silicon photonics and integrated optics;
- Green optical networking.

Guest Editors

Dr. Mengyue Shi

State Key Lab of Photonics and Communications, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China

Dr. Zhengxuan Li

School of Communication and Information Engineering, Shanghai University, Shanghai 200444, China

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Photonics
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
photonics@mdpi.com

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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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Prof. Dr. Nelson Tansu
School of Electrical and Electronic Engineering (EEE), The University of Adelaide, Adelaide, SA 5005, Australia

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