Special Issue

Innovations in Optical Wireless Communications: Challenges and Opportunities

Message from the Guest Editors

Optical wireless communication (OWC) represents an advanced technology in the field of communication, leveraging light waves to transmit data in free space. It offers significant advantages over traditional radio frequency communications, including a vast unlicensed spectrum, enhanced security, synergies with other technologies, such as imaging and tracking, and the potential for high data rates. This technology encompasses various forms, such as visible light communication (VLC) and free space optical communication (FSO), each providing unique solutions for a wide range of applications, from indoor wireless networking to long-distance communication for terrestrial or space environments. Despite its promising potential, OWC faces challenges such as signal attenuation, ambient light interference, turbulence, and line-of-sight requirements. There is also a necessity for transmitter and receiver hardware with properties including a high bandwidth, high output power, high sensitivity, and low size, weight, and power (SWAP). Overcoming these obstacles is crucial for enhancing OWC's reliability and practicality.

Guest Editors

Dr. Yingjie Shao
Fraunhofer UK Research Ltd., Glasgow, UK

Dr. Jonathan McKendry
Institute of Photonics, University of Strathclyde, Glasgow, UK

Deadline for manuscript submissions

31 August 2025

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Photonics

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Impact Factor 1.9
CiteScore 3.5

mdpi.com/si/210395

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

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Editor-in-Chief

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

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