

Special Issue

Artificial Intelligence for Label-Free Imaging and Spectroscopy in the Life Sciences

Message from the Guest Editor

We are pleased to invite you to contribute to this Special Issue, which seeks contributions that demonstrate how the synergy between AI and label-free optical imaging and spectroscopy can advance our understanding of life sciences. The collection will focus on two main contribution areas:

- AI for biophotonic data preprocessing: AI-based methods for spectral and spatial denoising, background subtraction, and signal unmixing, particularly in low-SNR or complex biological environments.
- AI for biophotonic data analysis: AI-based quantitative analysis, including regression models to predict analyte concentrations and classification models for cell states, disease presence or stage, drug response, image segmentation, and more.

Relevant techniques include Raman, Brillouin, infrared, and photothermal spectroscopy; multi-harmonic and multiphoton imaging; quantitative phase imaging; and optical coherence tomography. Applications may involve cells, tissues, organoids, pharmaceuticals, bioderived materials, or biohazards. We look forward to receiving your contributions.

Guest Editor

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About the Journal

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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