

## Steady-State and Ultrafast Time-Resolved Optical Spectroscopy and Laser Applications in Biology, Chemistry, Physics, Biomedical Optics and High-Resolution Imaging

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### Message from the Guest Editors

Optical spectroscopy, such as fluorescence and Raman spectroscopy techniques, and lasers have broad applications in many fields of science, such as physics, chemistry, biology, biomedical optics, and high-resolution imaging. The field of these optical technologies and lasers have greatly advanced in recent decades, with expanded applications for traditional technologies and new technologies developing and emerging. One of the main applications of these optical technologies is biomedical research and applications, such as optical biopsy, which was started about four decades ago in 1980s. With the new development of technologies, such as the optical Kerr effect (OKE), terahertz Raman (THz-Raman), orbital angular momentum (OAM) of light, Majorana photons, and stimulated Raman scattering (SRS), and artificial intelligence (AI), with Epigenomics for disease, the field of optical biopsy is being rejuvenated.

This Special Issue invites manuscripts that introduce the recent advances in “Steady-State and Ultrafast Time-resolved Optical Spectroscopy and Laser Applications in Biology, Chemistry, Physics, Biomedical Optics and High-Resolution Imaging”. All theoretical, numerical, and experimental papers are accepted. Topics include, but are not limited to, the following:

- Steady-state spectroscopy and imaging, Time-resolved spectroscopy and imaging;
- Ultrafast laser spectroscopy, Fluorescence spectroscopy and imaging;
- Stokes shift spectroscopy (SSS), Raman spectroscopy and imaging;
- Visible resonance Raman (VRR), Stimulated Raman scattering (SRS);
- Optical Kerr effect (OKE), Terahertz Raman (THz-Raman);
- Majorana photons, Orbital angular momentum (OAM);
- Multiphoton imaging and spectroscopy, Second harmonic generation (SHG);
- High-resolution imaging, Super-resolution imaging;
- Optical diagnostics, Flow cytometry, Optical biopsy,
- Quantum optical biopsy, Liquid biopsy, Tissue and cell optics;
- Epigenomics, DNA nucleotides with methylations;
- Machine learning and deep learning in optical biopsy.