PHOTOACOUSTICS

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DESCRIPTION

The aim of the open access Photoacoustics journal (PACS) is to publish original research and review contributions within the fast growing field of photoacoustics (optoacoustics) and thermoacoustics, which exploits optically and electromagnetically excited acoustical and thermal phenomena for visualization and characterization of a variety of materials and biological tissues, including living organisms. While some of the spectroscopic and photothermal applications have reached a mature state, many other research directions experience an explosive growth, in particular biomedical photoacoustics, which is currently considered the fastest growing bio-imaging modality. The wealth of investigated topics clearly indicates that this field has developed a broad range of tools for fundamental and applied research. The enormous recent progress is greatly supported by the advances in laser technologies, ultrasound detection approaches, development of inverse theory and fast reconstruction algorithms. This progress is also driven by a large number of unmet biological and medical needs that can be addressed by the unique contrast mechanisms available to photoacoustic (optoacoustic) methods. These include pre-clinical research and clinical imaging of vasculature, tissue and disease physiology, drug efficacy and treatment monitoring, optical anatomy and molecular imaging employing fluorochromes, chromophores and nanoparticles. Correspondingly applications span the entire range of biological and medical imaging including cancer, cardiovascular diseases, neuroimaging, ophthalmology or imaging in immunology, diabetes and obesity, cell trafficking application and a multitude of other biological functions. The multi-disciplinarily nature of photoacoustics and thermoacoustics is also evinced by the growing contribution from chemistry and nanotechnology where a multitude of novel contrast materials and agents have been constantly developed, from nanoparticles and organic dyes, to targeted agents and genetically expressed markers.

The list of topics of interest includes (but is not limited to) the following. Note that the terms optoacoustic and photoacoustic can be used synonymously.

- Photoacoustic / optoacoustic imaging, tomography
- Photoacoustic / optoacoustic mesoscopy and microscopy
- Novel detectors
- Novel laser and light sources and delivery technologies
- Spectroscopy and analysis of compounds
- Signal processing and image reconstruction methods
- Thermoacoustics and microwave-induced imaging
- Ultrasound-modulated optical phenomena
- Multi-modality systems involving light and sound
• Contrast agents, nanoparticles, nanotechnology
• Interactions with cells and tissues
• Pre-clinical imaging
• Molecular imaging
• Clinical translation and applications

This journal is a peer reviewed, open access journal.

Keywords: PACS, photoacoustics, optoacoustics, imaging, photothermal

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