OPTICAL TECHNOLOGIES IN BIOPHYSICS & MEDICINE XXIV

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The main goal of the Conference is to present and discuss recent developments and applications of laser and optical technologies in medicine and biology. The main attention will be paid to discussion of basic research and applications of coherent, low-coherent, polarized, spatially and temporally modulated light interaction with inhomogeneous absorbing media, tissue phantoms, and various types of tissues in vitro, ex vivo, and in vivo. Such phenomena, as elastic, inelastic and dynamic light scattering, Doppler shift measurement, nonlinear optics, photoacoustic and photothermal interactions, mechanical stresses, photobiological effects, will be considered. On this basis the variety of laser and optical technologies for medical diagnostics,

therapy, surgery, and light dosimetry will be analyzed. Lasers and optical techniques for cardiology, dermatology, ophthalmology, gynecology, dentistry and other fields of medicine will be presented. Light scattering and photochemical techniques in cell biology and microbiology will be discussed.

Topics:

- Photon migration in tissues
- Diffusion wave and correlation spectroscopy of tissues
- Spectrophotometry, fluorescence and Raman spectroscopy of tissues
- Static and dynamic light scattering in tissues
- Coherent optical methods for medical diagnostics, cell and tissue coherent microscopy
- Optical diffusion and coherent medical topography and tomography, OCT
- Laser Doppler measuring systems for medicine and biology
- Full field speckle-correlation biomedical techniques
- Blood properties, microcirculation and angiographic optical techniques
- Optical monitoring of lymphatics
- Optical techniques for biovibrations measurements
- Optical polarimetric methods for study of tissues and cell structures
- Photothermal and photoacoustic methods for tissue diagnostics
- Optical biopsy
- Optical microelastography of tissues
- Osmotic effects and optical monitoring of matter diffusion in tissues
- Tissue and blood optical clearing
- Optical glucose sensing
- Biosensors and implant photonics
- Microchannel and photonic crystal technologies in biology and medicine
- Remote-sensing in medicine
- Optogenetics and brain optical imaging
- Tissue phantoms, bioprinting, and regenerative photonics
- Photochemical, photothermal and photobiological effects, mechanisms of phototherapy
- Laser and optical technologies in microbiology
- High energy laser interactions with cells and tissues, laser surgery techniques
- Lasers and optical technologies in dermatology, ophthalmology, gynecology, cardiology, dentistry, etc