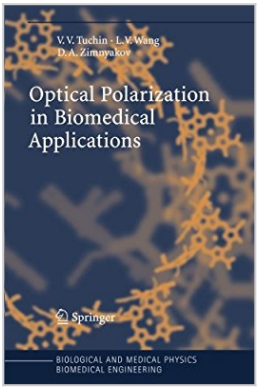


# Optical Polarization in Biomedical Applications (Biological and Medical Physics, Biomedical Engineering)

*By Valery V. Tuchin, Lihong Wang, Dmitry A. Zimnyakov*



**Optical Polarization in Biomedical Applications (Biological and Medical Physics, Biomedical Engineering)** By Valery V. Tuchin, Lihong Wang, Dmitry A. Zimnyakov

**Optical Polarization in Biomedical Applications** introduces key developments in optical polarization methods for quantitative studies of tissues, while presenting the theory of polarization transfer in a random medium as a basis for the quantitative description of polarized light interaction with tissues. This theory uses the modified transfer equation for Stokes parameters and predicts the polarization structure of multiple scattered optical fields. The backscattering polarization matrices (Jones matrix and Mueller matrix) important for noninvasive medical diagnostic are introduced. The text also describes a number of diagnostic techniques such as CW polarization imaging and spectroscopy, polarization microscopy and cytometry. As a new tool for medical diagnosis, optical coherent polarization tomography is analyzed. The monograph also covers a range of biomedical applications, among them cataract and glaucoma diagnostics, glucose sensing, and the detection of bacteria.

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## Editorial Review

Review

From the reviews:

"The authors take the reader on a journey through the theory of polarized light interaction in weakly and strongly scattering media … . I believe this is a well-written book that is of high relevance … . this book is a valuable addition to the literature on optics in biomedical applications, and I am convinced that it will serve as a source of inspiration for new researchers in this field, and as a valuable textbook for the biomedical optics community for years to come." (Alfons G. Hoekstra, Journal of Quantitative Spectroscopy and Radiative Transfer, Vol. 109, 2008)

From the Back Cover

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