
Polarization optics for biomedical and clinical applications

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In the past decades, many polarization techniques have been harnessed in biological and clinical research, each based upon measurement of the vectorial properties of light. Meanwhile, various advanced polarization measurement and sensing techniques, physical interpretation methods, and approaches to analyze biomedically relevant information have been developed. Here, we focus mainly on methodologies and applications related to tissue polarimetry, with an emphasis on the adoption of the Stokes vector-Mueller matrix formalism. Several recent breakthroughs, development trends, and potential multi-modal uses in conjunction with other techniques are also introduced and discussed, to give an overview in the use of polarization optics for biomedical and clinical applications.

Short Bio:



Honghui He received his PhD degree in Physics from Tsinghua University, China. He is an associate professor of Tsinghua Shenzhen International Graduate School, Tsinghua University. His research interests include polarization imaging method and techniques, polarimetric microscopy, endoscopy and their biomedical applications. He is the youth committee member of Biomedical Photonics Committee in Chinese Optical Society, the youth editorial board member of Chinese Journal of Lasers, a senior member of Chinese Optical Society, also a member of Chinese Society of Biomedical Engineering, SPIE, and Optica. Dr. He published more than 140 scientific research articles, received more than 3700 citations. Dr. He also co-authored 3 scientific book chapters, licensed more than 10 patents, and has been selected as the World's Top 2% Scientists 2023. As the Principal Investigator or Co-Principal Investigator, Dr. He received the funding from National Key Scientific Research Instrument Developing Projects, Key Project of National Natural Science Foundation of China, etc.