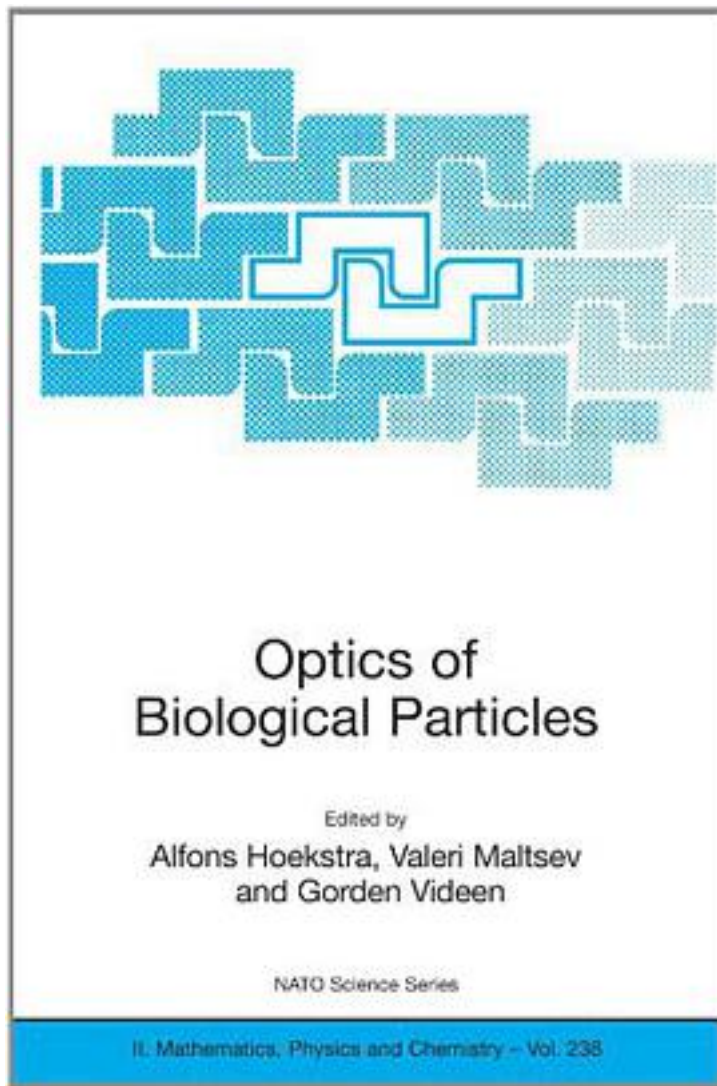


Optics of Biological Particles



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The optics of biological particles is of great relevance to detect and characterize biological material, such as bacteria, marine particles, or blood cells. Many remote sensing detectors for biological cells exploit single scattering, depolarization, or fluorescence signals. The growing knowledge on the optics of biological particles is therefore of ever increasing relevance in such diverse fields as microbiology, cytology, biomedicine, biophysics, astrobiology, etc. This book covers the optics of single biological particles, both theory and experiment, with emphasis on Elastic Light Scattering and Fluorescence. It deals with the optics of bacteria (bio-aerosols), marine particles (selected phytoplankton communities) and red and white blood cells. Moreover, there are dedicated chapters on a general theory for scattering by a cell, and modelling and simulation of scattering by inhomogeneous biological cells. Finally, one chapter is dedicated to astro-biological signatures, discussing the possibilities for detecting non-terrestrial biological material. The volume has up-to-date discussions on new experimental and numerical techniques, and many examples of applications of these techniques in real-life systems, as used to detect and characterize e.g. biological warfare agents or human blood cells.

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