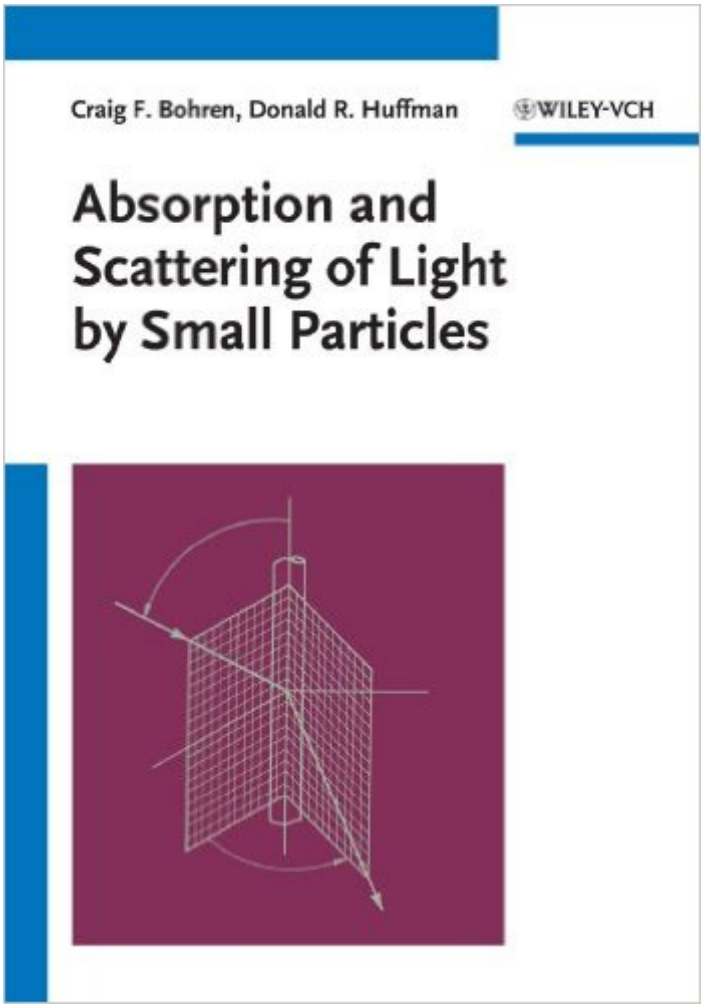
Absorption And Scattering Of Light By Small Particles



Synopsis

Absorption and Scattering of Light by Small Particles Treating absorption and scattering in equal measure, this self-contained, interdisciplinary study examines and illustrates how small particles absorb and scatter light. The authors emphasize that any discussion of the optical behavior of small particles is inseparable from a full understanding of the optical behavior of the parent material-bulk matter. To divorce one concept from the other is to render any study on scattering theory seriously incomplete. Special features and important topics covered in this book include: * Classical theories of optical properties based on idealized models * Measurements for three representative materials: magnesium oxide, aluminum, and water * An extensive discussion of electromagnetic theory * Numerous exact and approximate solutions to various scattering problems * Examples and applications from physics, astrophysics, atmospheric physics, and biophysics * Some 500 references emphasizing work done since Kerker's 1969 work on scattering theory * Computer programs for calculating scattering by spheres, coated spheres, and infinite cylinders

Book Information

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Customer Reviews

Bohren and Huffman present a coherent and comprehensive description of absorption and scattering by small particles. The text is written in a very amusing style, where ideas are presented in a conversation like manner, as if the authors are directly addressing the reader, providing jokes and examples to illustrate their point. This text builds upon the description provided by Hulst in classic text, and provides a deal of useful information particularly related to absorption (not covered by the text of Hulst)!The first eight chapters illustrate the basic theory of scattering and absorption,

introducing expression and physics relevant to spheres, spheroids and a whole array of particles. This section is quite similar in spirit to the text by Hulst, requires a background in electrodynamics (to make it most useful) . In part II and part III, the authors discuss the optical constants of bulk matter and small particles respectively, citing examples of metallic as well as semiconducting particles. This book fills the need for a textbook for studying extinction coefficients of all kinds of particles, and is useful for physicists, chemists, meteorologists, material scientists, etc. Nonlinear optics is not covered, as also the effect of multi-particle scattering (and thankfully so)!The book is very useful for people studying absorption (and scattering) of nanoparticles. It contains a good description of basic physics of plasmon resonance, extremely relevant to the research of people studying metallic particles. Bohren has written some really amusing as well as insightful "science" books on experiments and observations of physical phenomenon in daily life (and atmospheric sciences). This book is similar, with additional detail in terms of mathematical equations:)!

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