

1. Record Nr.	UNINA9910139806103321
Titolo	Light Scattering from Microstructures [[electronic resource]] : Lectures of the Summer School of Laredo, University of Cantabria, Held at Laredo, Spain, Sept.11-13, 1998 // edited by Fernando Moreno, Francisco Gonzales
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2000
ISBN	3-540-46614-2
Edizione	[1st ed. 2000.]
Descrizione fisica	1 online resource (XII, 300 p. 121 illus.)
Collana	Lecture Notes in Physics, , 0075-8450 ; ; 534
Disciplina	535.43
Soggetti	Nanotechnology Solid state physics Spectroscopy Microscopy Physics Solid State Physics Spectroscopy and Microscopy Physics, general
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Light scattering by submicron spherical particles on semiconductor surfaces -- to Light Scattering from Microstructures -- Theory -- Heaviside Operational Calculus and Electromagnetic Image Theory -- Mathematical Methods for Data Inversion -- Mueller Matrices -- Scattering by Particles on Substrates. Numerical Methods -- Light Scattering from a Sphere Near a Plane Interface -- Electromagnetic Scattering by Cylindrical Objects on Generic Planar Substrates: Cylindrical-Wave Approach -- T-Matrix Method for Light Scattering from a Particle on or Near an Infinite Surface -- Scattering of Polarized Light -- Properties of a Polarized Light-Beam Multiply Scattered by a Rayleigh Medium -- Polarization and Depolarization of Light -- Statistics of the Scattered Light -- Polarisation Fluctuations in Light

Scattered by Small Particles -- Intensity Statistics of the Light Scattered by Particles on Surfaces -- Applications -- Microstructures in Rough Metal Surfaces: Electromagnetic Mechanism in Surface-Enhanced Raman Spectroscopy -- Light Scattering by Particles and Defects on Surfaces: Semiconductor Wafer Inspection -- From Scattering to Waveguiding: Photonic Crystal Fibres -- The Angular Distribution of Light Emitted by Sonoluminescent Bubbles -- Light Scattering by Regular Particles on Flat Substrates.

Sommario/riassunto

With a tutorial approach, this book covers the most important aspects of the scattering of electromagnetic radiation from structures (isolated or on a substrate) whose size is comparable to the incident wavelength. Special emphasis is placed on the electromagnetic problem of microstructures located close to an interface by reviewing the most important numerical methods for calculating the scattered field. The polarization propagation and the statistics of scattered intensity in microstructured targets are also presented from a didactic point of view. The final part of the book is dedicated to the most significant applications in both basic and applied research: surface enhanced Raman scattering, monitoring and detection of surface contamination by particles, optical communications, particle sizing and others.
