

1. Record Nr.	UNISA996490352003316
Titolo	Light polarization and multiple scattering in turbid media / / Alexander Kokhanovsky, editor
Pubbl/distr/stampa	Cham, Switzerland : , : Springer Nature Switzerland AG, , [2022] ©2022
ISBN	9783031102981 9783031102974
Descrizione fisica	1 online resource (201 pages)
Collana	Springer Series in Light Scattering ; ; Volume 8
Disciplina	535.43
Soggetti	Light - Scattering Light - Transmission
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Contents -- Multiple-Path Model of Reflection and Transmission for a Turbid Slab -- 1 Introduction -- 2 Probability Flux, Reflection, and Transmission -- 2.1 Path Length Probability Density -- 2.2 Boundary Conditions -- 3 Reflection and Transmission-No Internal Reflection -- 3.1 Reflection -- 3.2 Transmission -- 3.3 Summary-No Internal Reflection -- 4 Experiment-Dyed Fabric -- 5 Diffusion of Light in Paper -- 6 Reflection and Transmission-Internal Reflection -- 6.1 Boundary Conditions -- 6.2 Evaluation of Integral -- 6.3 Reflection and Transmission -- 6.4 Reflection -- 6.5 Transmission -- 6.6 Normalization -- 6.7 Plots of Reflectance and Transmittance-Internal Reflection -- 7 Conclusion -- References -- Laboratory Measurements of Multi-spectral, Polarization, and Angular Characteristics of Light Reflected from Particulate Samples -- 1 Introduction -- 2 Basic Definitions and Design Tradeoffs -- 2.1 Reflectance Configuration and Nomenclature -- 2.2 Instrument Design Tradeoffs -- 3 The Three-Colour Goniometer -- 3.1 Construction Motivations -- 3.2 System Descriptions -- 3.3 System Characterizations -- 3.4 Typical Measurement Results -- 4 The Bi-directional Reflectance Imaging System -- 4.1 Construction Motivations -- 4.2 Overall Description -- 4.3 Calibration and Characterizations -- 4.4 Example Measurements -- 5 The Bi-directional Reflectance Spectrometer -- 5.1 Construction

Motivations -- 5.2 System Descriptions -- 5.3 Characterizations
 and Calibrations -- 5.4 Typical Measurement Results -- 6 Summary --
 References -- Spectropolarimetry of Snow and Ice Surfaces:
 Measurements and Radiative Transfer Calculation -- 1 Introduction --
 2 Definition of Radiant Quantities Concerning the Polarization State of
 Light -- 3 Spectral Measurements and Instrumentation Device.
 4 Spectral Polarization Properties of Light Reflected from Snow and Ice
 Surfaces -- 4.1 Spectral Dependence on the DoLP, upper P Subscript
 qP_q , upper P Subscript uP_u and HDRF -- 4.2 Snow Grain Size
 Dependence on the DoLP -- 4.3 High DoLP for the Melt-Freeze Crust
 -- 4.4 Viewing Angle Dependence on the DoLP -- 4.5 Viewing and
 Azimuth Angle Dependence on the DoLP and Related Parameters upper
 P Subscript qP_q and upper P Subscript uP_u -- 4.6 Atmosphere Effects
 on the Polarization Properties of Snow Surface by Use of the Radiative
 Transfer Model -- 4.7 Possibility of the Use of Polarization Information
 for the Remote Sensing -- 5 Conclusion and Closing Remarks --
 References -- Light Scattering by Large Densely Packed Clusters
 of Particles -- 1 Introduction -- 2 Model Description -- 2.1 DGTD
 Method -- 2.2 Parallel Light Scattering Code -- 2.3 Generation
 of Dense Clusters of Irregular Particles -- 3 Results -- 3.1 Non-
 absorbing Clusters -- 3.2 Absorbing Layers -- 4 Conclusion --
 References -- Light Backscattering by Atmospheric Particles: From
 Laboratory to Field Experiments -- 1 Introduction -- 1.1 On
 the Complexity of Atmospheric Particles -- 1.2 On the Importance
 of Light Backscattering by Atmospheric Particles -- 1.3 Theoretical
 Considerations -- 1.4 State of the Art on Light Backscattering -- 1.5
 Outline of this Book Chapter -- 2 Light Scattering at Near
 Backscattering Angles ($\theta \approx 180^\circ$) -- 2.1 The Laboratory +
 Polarimeter -- 2.2 Scattering Matrix Elements Retrieval at Near
 Backscattering ($\theta \approx 180^\circ$) -- 2.3 Light Scattering by Mineral Dust
 at Near Backscattering Angles ($\theta \approx 180^\circ$) -- 2.4 Comparison with T-
 matrix Numerical Simulations -- 3 Light Backscattering at Exact
 Backscattering Angle ($\theta = 180^\circ$) -- 3.1 The Laboratory -polarimeter ($\theta = 180^\circ$)
 -- 3.2 Scattering Matrix Elements and Lidar PDR Retrieval
 at Backscattering ($\theta = 180^\circ$).
 3.3 Light Backscattering by Spherical Sulfates in Laboratory -- 3.4 Light
 Backscattering by Core-Shell Organic Sulfates in Laboratory -- 3.5
 Light Backscattering by Soot Particles in Laboratory -- 3.6 Light
 Backscattering by Mineral Dust in Laboratory -- 4 Light Backscattering
 in the Atmosphere: Lidar Field Experiments -- 4.1 Atmospheric Lidar
 Implications -- 4.2 Field Version of the Laboratory -polarimeter --
 4.3 Application Case Study: Time-Altitude Maps of Dust Particles
 Backscattering Revealing the Underlying Complex Physical-Chemistry
 -- 5 Conclusion and Outlooks -- References -- Index.
