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Nota di contenuto	Polymers and Electromagnetic Radiation: Fundamentals and Practical Applications; Contents; Preface; Introduction; Part I: Non-Ionizing Radiation; 1 Sub-Terahertz Radiation Including Radiofrequency (RF) and Microwave Radiation; 1.1 Absorption; 1.1.1 General Aspects; 1.1.2 Dissipation of Energy; 1.1.2.1 Frequency Dependence; 1.1.2.2 Temperature Dependence; 1.2 Applications in Polymer Chemistry; 1.2.1 General Aspects; 1.2.2 Thermal Effects; 1.2.2.1 Polymer Synthesis; 1.2.2.2 Polymer Processing; 1.2.2.3 Modification of Polymers; 1.2.2.4 Polymer Degradation 1.2.2.5 Polymer Supports for Solid-Phase Organic Synthesis (SPOS)1.2.3 Non-Thermal Effects; 1.2.3.1 Unresolved Questions; 1.2.3.2 Plasma-Assisted Chemistry; 1.3 Applications in Polymer Physics; 1.3.1 Dielectric Spectroscopy of Polymers; 1.3.2 Microwave Probing of Electrical Conductivity in Polymers; 1.3.3 Nondestructive Microwave Testing of Polymer Materials; 1.4 Industrial Applications; References; 2 Infrared Radiation; 2.1 Absorption; 2.1.1 General Aspects; 2.1.2

Crystalline Polymers; 2.1.3 Polarized IR Radiation; 2.1.4 Far-IR Radiation; 2.2 Applications; 2.2.1 General Aspects
2.2.2 Mid-IR Analysis
2.2.2.1 Identification of Synthetic Polymers;
2.2.2.2 Proteins; 2.2.2.3 Nucleic Acids; 2.2.3 NIR Analysis of Synthetic Organic Polymers; 2.2.4 Far-IR Analysis of Polymers: Terahertz Spectroscopy; 2.2.4.1 General Aspects; 2.2.4.2 Nondestructive Testing of Plastic Articles: THz Imaging; 2.2.4.3 THz Absorption by Biopolymers; 2.2.4.4 THz Studies of Biopolymers in Liquid Water; 2.2.4.5 Generation of THz Radiation in Poled Polymers; 2.2.5 Special Applications; 2.2.5.1 Thin Polymer Films; 2.2.5.2 Orientation Measurements; 2.2.5.3 IR Microspectroscopy and IR Imaging
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2.4 Time-Resolved Measurements in the mid-IR Range; 2.4.1 In-Situ Monitoring of Chemical Reactions; 2.4.2 Transient Two-Dimensional IR Spectroscopy; 2.4.2.1 T-Jump Studies; 2.4.2.2 Flash Photolysis; 2.5 Time-Resolved THz Spectroscopy; 2.5.1 Photoconductivity of Conjugated Polymers; 2.5.2 Folding of Proteins; 2.6 THz Optics Made From Polymers; References; 3 Visible and Ultraviolet Light; 3.1 Absorption; 3.1.1 General Aspects; 3.1.2 The Molecular Orbital Model; 3.1.3 The Jablonski Diagram
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3.3.3.2 248 nm Lithography

Sommario/riassunto

The first part of the book deals with the interaction of polymers with non-ionizing radiation in the frequency-range from sub-terahertz over infrared radiation to visible and ultraviolet light, while the second part covers the interaction with ionizing radiation from the extreme ultraviolet to X-ray photons. Consequently, the book provides a systematic overview of how both the non-ionizing and the ionizing radiation can be used for different polymerization approaches, spectroscopy methods and lithography techniques. The covered applications include curing of coatings and adhesives, xerography,
