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Sommario/riassunto	Ultrasonic waves are nowadays used for multiple purposes including both low-intensity/high frequency and high-intensity/low-frequency ultrasound. Low-intensity ultrasound transmits energy through the medium in order to obtain information about the medium or to convey information through the medium. It is successfully used in non-destructive inspection, ultrasonic dynamic analysis, ultrasonic rheology, ultrasonic spectroscopy of materials, process monitoring, applications in civil engineering, aerospace and geological materials and structures, and in the characterization of biological media. Nowadays, it is an essential tool for assessing metals, plastics, aerospace composites, wood, concrete, and cement. High-intensity ultrasound deliberately affects the propagation medium through the high local temperatures and pressures generated. It is used in industrial processes such as welding, cleaning, emulsification, atomization, etc.; chemical reactions and reactor induced by ultrasonic waves; synthesis of organic and inorganic materials; microstructural effects; heat generation; accelerated material characterization by ultrasonic fatigue testing; food processing; and environmental protection. This book collects eleven papers, one review, and ten research papers with the aim to present recent advances in ultrasonic wave propagation applied for the characterization or the processing of materials. Both fundamental science and applications of ultrasound in the field of material characterization and material processing have been gathered.