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Edizione	[3rd ed. 2025.]
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Soggetti	Forests and forestry Building materials Acoustics Mechanics Materials science Forestry Wood, fabric, and textiles Classical Mechanics Materials Science
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Nota di contenuto	Introduction -- Ultrasonic wave propagation in solids -- Wood characterisation with mechanical vibrations -- Damping of mechanical vibrations in wood -- Attenuation of ultrasonic waves in wood -- Transducers for ultrasonic waves -- Global elastic constants of wood -- Local elastic characterisation of wood -- Acoustic and elastic invariants and nonlinearity of wood -- Acoustics of trees -- Effect of silvicultural factors on acoustical properties of trees -- Acoustic methods for wood products' quality assessment -- Environmental modifiers of wood detected with ultrasonic waves -- Acoustical properties of wood species for musical instruments -- Substitutive wood species for musical instruments -- Acoustic emission -- Advanced treatments on acoustic emission signals -- Acoustic emission and digital imaging technique -- Acousto- ultrasonics, a

nondestructive testing method of wood -- Acousto ultrasonics on trees, logs and utility poles -- High power ultrasound -- Acoustic emission technique for art objects -- Ultrasound for imaging wood panel paintings -- Holographic interferometry for imaging art objects -- wood painted panels inspection with THz imaging technique -- Archaeologic wood, wood of historic artefacts and structures -- Artificial intelligence and acoustics of wood.

Sommario/riassunto

The Third Edition of Acoustics of Wood offers a comprehensive overview of advanced acoustical techniques for wood characterization and assessment. It stands as an authoritative guide on using ultrasound and acoustic emissions to assess and characterize wood's physical and mechanical properties. Divided into six parts, this extended and updated edition covers a broad spectrum of topics including ultrasonic wave propagation, nondestructive testing methods for wood characterization, and the innovative use of acoustics in quality assessment of wood products. It also explores the acoustic properties vital for musical instruments and the application of acoustics in preserving historically significant art objects and timber structures. With chapters on cutting-edge topics like artificial intelligence's role in wood acoustics, readers are invited to explore the intersection of tradition and technology. Targeted at professionals and researchers in materials science, engineering, and conservation, this edition is invaluable for those seeking to deepen their knowledge of wood's acoustic properties. Readers with a background in physics or engineering will find the discussions on ultrasonic techniques and acoustic emissions particularly enlightening. By bridging theoretical concepts with practical applications, this book not only enriches scientific understanding but also opens up new avenues for innovation in wood assessment and preservation. From the review of the first edition of the book: "it will surely remain the most comprehensive work in this field for a long time to come. It belongs on the bookshelf of every material scientist and structural engineer". CATGUT ACOUSTICAL SOCIETY JOURNAL USA "... the author has done an admirable job, collecting, organizing, and reviewing the disparate literature on most aspects of the Acoustics of Wood" JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA, USA.
