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Nota di contenuto	Introduction -- History and Fundamentals -- Sensors and Instruments -- Parametric AE Analysis -- Signal-Based AE Analysis -- Source Localization -- Source Mechanisms -- Moment Tensor Analysis -- AE in Plate-like Structures -- General Remarks on Applications -- AE in Concrete -- AE applied to Superstructures -- AE applied to Substructures -- AE applied to Fresh Concrete -- AE in Masonry -- AE to Study Rock Stability -- AE in Laboratory Rock Mechanics -- AE in Metal -- AE in Wood -- AE in Biological Structures -- AE in Polymeric Composites -- AE in Ceramics and Ceramic Matrix Composites -- Wireless AE techniques -- Opportunities, Limitations, Accuracy and Skills.

Sommario/riassunto

This book provides an introduction to Acoustic Emission Testing and its applications to different materials like concrete, steel, ceramics, geotechnical materials, polymers, biological structures and wood. Acoustic Emission Techniques (AET) techniques have been studied in engineering for a long time. The techniques are applied more and more to practical investigations and are more and more standardized in codes. This is because the degradation of structures due to ageing urgently demand for maintenance and rehabilitation of structures in service. It results in the need for the development of advanced and efficient inspection techniques. In mechanical engineering and concerning the monitoring of machines and mechanical components, AE is a widely accepted observing deterioration in the frame of structural health monitoring. The advantages of AE like sensitivity, damage localization potential, non-intrusive nature as well as developments in signal analysis and data transmission allow applications that could not be considered decades ago. As such, AE techniques draw great attention to diagnostic applications and in material testing. This book covers all levels from the description of AE basics for AE beginners (level of a student) to sophisticated AE algorithms and applications to real large-scale structures as well as the observation of the cracking process in laboratory specimen to study fracture processes. This book has proved its worth over the past twelve years. Now in its second edition, it will be a resource that sets the standard and equips readers for the future. All chapters from the 1st edition have been updated and rewritten and eight extra chapters (e.g also regarding AE tomography, AE in plate-like structures and AE for investigations of hardening of fresh concrete) have been added.