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(ENF); 4.5 Mode I by wedge loading with Hopkinson bar; 4.6 Acknowledgment; 4.7 References; 5Experimental characterization of interlaminar shear strength; 5.1 Introduction; 5.2 Short beam shear test 5.3 Double-notch shear test5.4 Arcan test; 5.5 Conclusion; 5.6 References; 5.7 Appendix: Nomenclature; Part II Delamination: detection andcharacterization; 6 Integrated and discontinuous piezoelectric sensor/actuator for delamination detection; 6.1 Introduction; 6.2 Typical patterns for piezoelectric (PZT) or piezoelectric fiber reinforced composite (PFRC) sensor/actuator; 6.3 Constitutive equations and modelling development for a laminated beam with a single delamination and surface-bonded with an integrated piezoelectric sensor/actuator (IPSA); 6.4 Parametric study 6.5 Experimental verification6.6 Conclusions; 6.7 Acknowledgments; 6.8 References; 6.9 Appendix; 7 Lamb wave-based quantitative identification of delamination in composite laminates; 7.1 Introduction; 7.2 Lamb waves in composite laminates; 7.3 Lamb wave scattering by delamination; 7.4 Lamb wave-based damage identification for composite structures; 7.5 Design of a diagnostic Lamb wave signal; 7.6 Digital signal processing (DSP); 7.7 Signal pre-processing and de-noising; 7.8 Digital damage fingerprints (DDF); 7.9 Data fusion; 7.10 Sensor network for delamination identification
7.11 Case studies: evaluation of delamination in composite laminates

Sommario/riassunto

Given such advantages as low weight compared to strength and toughness, laminated composites are now used in a wide range of applications. Their increasing use has underlined the need to understand their principal mode of failure, delamination. This important book reviews key research in understanding and preventing delamination.The first part of the book reviews general issues such as the role of fracture mechanics in understanding delamination, design issues and ways of testing delamination resistance. Part two describes techniques for detecting and characterising delamination such a