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Nota di contenuto	Cover; Title Page; Copyright Page; Contents; Preface; Acknowledgements; 1 Stress and Strain Analysis of Symmetric Composite Single Lap Joints Under Combined Tension and In-Plane Shear Loading; 1.1 Introduction; 1.2 Equations and Solution; 1.2.1 Model Description; 1.2.2 Governing Equations for Tension Loading N_x ; 1.2.3 Governing Equation for In-Plane Shear Loading N_{xy} ; 1.2.4 Solutions; 1.2.4.1 Adhesive Peel Stress σ_{zz} Due to N_x ; 1.2.4.2 Adhesive Shear Stress σ_{xz} Due to N_x ; 1.2.4.3 Adhesive Shear Stress σ_{yz} Due to N_{xy} ; 1.3 Solution Verification; 1.4 Yield Criterion; 1.5 Case Studies 1.6 SummaryReferences; 2 Finite Element Modeling of Viscoelastic Behavior and Interface Damage in Adhesively Bonded Joints; 2.1 Introduction; 2.2 Finite Element Analysis of Viscoelastic Adhesively Bonded Joints; 2.2.1 Constitutive Relation; 2.2.2 Numerical Example; 2.2.2.1 Stress Distribution along Overlap Length; 2.2.2.2 Effect of Thermal Expansion; 2.3 Damage Analysis of Viscoelastic Adhesively Bonded Joints; 2.3.1 Constitutive Relation of Cohesive Element; 2.3.1.1 Linear Elastic Traction-Separation Law; 2.3.1.2 Damage Initiation and

Evolution; 2.3.2 Numerical Example
2.3.2.1 Joint Stiffness; 2.3.2.2 Damage of Cohesive Elements; 2.3.2.3 Effects of Interface Damage on Adhesive Layer; 2.4 Summary and Conclusions; Acknowledgements; References; 3 Modeling of Cylindrical Joints with a Functionally Graded Adhesive Interlayer; 3.1 Introduction; 3.2 Axisymmetric Model; 3.2.1 Stress Fields in the Bonded Assembly; 3.2.1.1 Inner Adherend; 3.2.1.2 Adhesive; 3.2.1.3 Outer Adherend; 3.2.2 Stiffness Tailored Adhesive Interlayer; 3.2.2.1 Tubular Joints; 3.2.2.2 Shaft-Tube Joints; 3.3 Constitutive Models of the Adherends and FMGB Adhesive; 3.4 Variational Approach
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4.4.2 FE Models for a Validation Purpose

Sommario/riassunto

The book comprehensively charts a way for industry to employ adhesively bonded joints to make systems more efficient and cost-effective. Adhesively bonded systems have found applications in a wide spectrum of industries (e.g., aerospace, electronics, construction, ship building, biomedical, etc.) for a variety of purposes. Emerging adhesive materials with im
