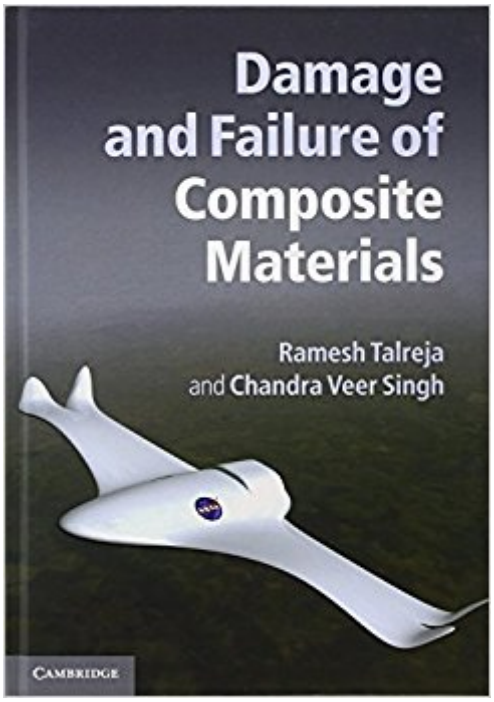
Damage And Failure Of Composite Materials



Synopsis

Understanding damage and failure of composite materials is critical for reliable and cost-effective engineering design. Bringing together materials mechanics and modeling, this book provides a complete guide to damage, fatigue and failure of composite materials. Early chapters focus on the underlying principles governing composite damage, reviewing basic equations and mechanics theory, before describing mechanisms of damage such as cracking, breakage and buckling. In subsequent chapters, the physical mechanisms underlying the formation and progression of damage under mechanical loads are described with ample experimental data, and micro- and macro-level damage models are combined. Finally, fatigue of composite materials is discussed using fatigue-life diagrams. While there is a special emphasis on polymer matrix composites, metal and ceramic matrix composites are also described. Outlining methods for more reliable design of composite structures, this is a valuable resource for engineers and materials scientists in industry and academia.

Book Information

Hardcover: 314 pages

Publisher: Cambridge University Press; 1 edition (July 23, 2012)

Language: English

ISBN-10: 0521819423

ISBN-13: 978-0521819428

Product Dimensions: 6.8 x 0.7 x 9.7 inches

Shipping Weight: 1.7 pounds (View shipping rates and policies)

Average Customer Review: 2.0 out of 5 stars 1 customer review

Best Sellers Rank: #3,016,374 in Books (See Top 100 in Books) #97 inÃ Â Books > Engineering & Transportation > Engineering > Materials & Material Science > Fracture Mechanics #832 inÃ Â Books > Engineering & Transportation > Engineering > Materials & Material Science > Polymers & Textiles #3265 inÃ Â Books > Engineering & Transportation > Engineering > Materials & Material Science > Materials Science

Customer Reviews

"... a welcome addition to the literature. Numerous books treat separately the mechanics of composites and failure of materials: very few combine them together and in such a coherent and comprehensive manner." Ettore Barbiei, The Aeronautical Journal

Damage and failure of materials is a topic of concern in many engineering applications, particularly where reliable and cost-effective design is important. This book provides a complete treatment of damage mechanics of composite materials, presenting a balanced experimental and computational approach for engineers and materials scientists in industry and academia.

The book was designed for the academia. It contains many mathematical models and parameters. I believe the academia would appreciate this, but the practicing engineer/designer would find the contents of the book less than useful.The book has not impacted me in any way. I have the same knowledge and outlook about the ageing of composites that I had before reading this book.

Damage Mechanics of Composite Materials, Volume 9 (Composite Materials Series) Damage and Failure of Composite Materials Composite Construction for Homebuilt Aircraft: The Basic Handbook of Composite Aircraft Aerodynamics, Construction, Maintenance and Repair Plus, How-To and Design Information Engineering Materials 3: Materials Failure Analysis: Case Studies and Design Implications (International Series on Materials Science and Technology) (v. 3) Processing Techniques and Tribological Behavior of Composite Materials (Advances in Chemical and Materials Engineering) Composite Materials: Materials, Manufacturing, Analysis, Design and Repair Mechanics Of Composite Materials (Materials Science & Engineering Series) Understanding Aircraft Composite Construction: Basics of Materials and Techniques for the Non-Engineer Mechanics of Composite Materials, Second Edition (Mechanical and Aerospace Engineering Series) Friction and Wear of Polymer Composites (Composite Materials Series 1) Design and Analysis of Structural Joints with Composite Materials Composite Materials for Implant Applications in the Human Body: Characterization and Testing/Pcn No. : 04-011780-54 (Astm Special Technical Publication// Stp) Introduction to Composite Materials Design, Second Edition Stress Analysis of Fiber-Reinforced Composite Materials Engineering Mechanics of Composite Materials Handbook of Materials Failure Analysis with Case Studies from the Oil and Gas Industry Guide to Deterioration and Failure of Building Materials Failure Analysis of Engineering Materials Failure of Materials in Mechanical Design: Analysis, Prediction, Prevention, 2nd Edition Failure Analysis of Brittle Materials: Advances in Ceramics

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