



# Mechanics of Failure Mechanisms in Structures (Solid Mechanics and Its Applications)

*By R.L. Carlson, G.A. Kardomateas, J.I. Craig*

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This book examines the mechanisms and underlying mechanics of failure in materials including metals, ceramics, polymers, composites and bio-materials. Covers fracture, fatigue, buckling, bio-material failure in prosthetic heart valves and hip joints and more.

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## **Editorial Review**

From the Back Cover

This book focuses on the mechanisms and underlying mechanics of failure in various classes of materials such as metallic, ceramic, polymeric, composite and bio-material. Topics include tensile and compressive fracture, crack initiation and growth, fatigue and creep rupture in metallic materials, matrix cracking and delamination and environmental degradation in polymeric composites, failure of bio-materials such as prosthetic heart valves and prosthetic hip joints, failure of ceramics and ceramic matrix composites, failure of metallic matrix composites, static and dynamic buckling failure, dynamic excitations and creep buckling failure in structural systems. Chapters are devoted to failure mechanisms that are characteristic of each of the materials.

The work also provides the basic elements of fracture mechanics and studies in detail several niche topics such as the effects of toughness gradients, variable amplitude loading effects in fatigue, small fatigue cracks, and creep induced brittleness. Furthermore, the book reviews a large number of experimental results on these failure mechanisms.

The book will benefit structural and materials engineers and researchers seeking a “birds-eye” view of possible failure mechanisms in structures along with the associated failure and structural mechanics.

## **Users Review**

**From reader reviews:**

**Gilbert Albright:**

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