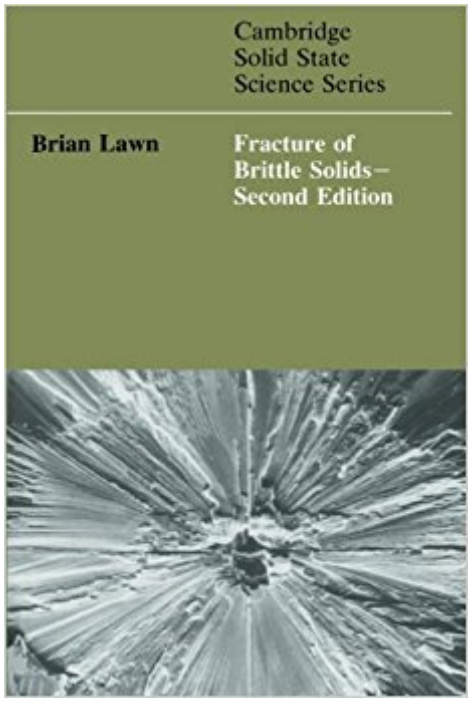
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Fracture Of Brittle Solids (Cambridge Solid State Science Series)



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Synopsis

This is an advanced text for higher degree materials science students and researchers concerned with the strength of highly brittle covalent-ionic solids, principally ceramics. It is a reconstructed and greatly expanded edition of a book first published in 1975. The book presents a unified continuum, microstructural and atomistic treatment of modern day fracture mechanics from a materials perspective. Particular attention is directed to the basic elements of bonding and microstructure that govern the intrinsic toughness of ceramics. These elements hold the key to the future of ceramics as high-technology materials--to make brittle solids strong, we must first understand what makes them weak. The underlying theme of the book is the fundamental Griffith energy-balance concept of crack propagation. The early chapters develop fracture mechanics from the traditional continuum perspective, with attention to linear and nonlinear crack-tip fields, equilibrium and non-equilibrium crack states. It then describes the atomic structure of sharp cracks, the topical subject of crack-microstructure interactions in ceramics, with special focus on the concepts of crack-tip shielding and crack-resistance curves, and finally deals with indentation fracture, flaws and structural reliability.

Book Information

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Customer Reviews

."..unified treatment renders the book very accessible and greatly helps the reader assemble the

pieces...the text is very well supported by numerous pictures and diagrams and by a limited series of references which should assist interested readers to move beyond the introductory notions described in the book...highly recommended for any graduate student, engineer, or scientist who would like to gain a first but significiant view 'of the other side of the brittle fracture probem.'" Philippe Geubelle, Pageoph

Originally published in 1975, this advanced text for higher degree materials science students and researchers concerned with the strength of highly brittle covalent-ionic solids, principally ceramics, has been thoroughly revised and expanded.

Though not a giant one, Lawn's piercing thoughts into the essence of brittle fracture can be clearly read and transferred (especiaaly for those who have studied and indulged into fracture like me). From the beginning, Griffith's spirits are extracted from his classic papers and put as a corner stone through out the book. Unlike many other authors, the author apparently appreciates and must have digged deeply into Griffith's paper. The remaining chapters illustrate it in an enlightening way, i.e., the subjects are treated as concepts-faced, not a pile-ups of entangling "dislocations" (facts). At least for me, some concepts had firmly taken their roots in my mind after reading. Not the least, the references given guides one fracturing through the literature and aims at providing some classic papers in the field for further study. They really take effect! I am at least not missed in library.

A book that gives you comprehensive ideas on the physical picture of brittle fracture

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