Progress in Fracture and Damage Mechanics

Description: Special topic volume, invited papers only

This special-topic volume reports on new progress made in the analysis and understanding of fracture and damage mechanics. The Finite Element Method is a well-established analytical tool for theoretical fracture analysis. The development of interface elements which combine aspects of both fracture and damage mechanics has permitted the prediction of both crack initiation and propagation. A number of the papers presented here deal with their use and further development.

Substantial progress has also been made in the use of the Boundary Element Method for treating crack problems. The inherent mathematical complexity of this method has resulted in somewhat slower progress than that enjoyed by the Finite Element Method and is still the focus of much research. The volume also presents a number of contributions arising from this field. A topic which is closely related to the study of fracture is structural repair. Although repairs are usually effected after fracture occurs, the structural analyst must still ensure that the repair itself is not prone to cracking or other forms of damage. Two approaches to the study of damage in a repaired structure are described in this special volume.

These three aspects, taken together, ensure that even the expert will learn something new from this book.

Contents: Periodical: Key Engineering Materials
Volume: Progress in Fracture and Damage Mechanics
Papers published in this volume: Preface

Experiments to Detect Damage Progression in Axially Compressed CFRP Panels under Cyclic Loading
Richard Degenhardt, Dirk Wilckens, Hermann Klein, Alexander Kling, Klaus Rohwer, Wolfgang Hillger, Hans Christian Goetting, Andreas Gleiter

An Experimental and Numerical Study of the Static and Fatigue Performance of a Composite Adhesive Repair
Rosen T. Tenchev, Brian G. Falzon

Influence of Porosity on the Interlaminar Shear Strength of Fibre-Metal Laminates
Cláudio S. Lopes, Joris J.C. Remmers, Zafer Gürdal

Automatic Insertion of Cohesive Elements for Delamination Modelling
I. Guiamatsia, Brian G. Falzon, G.A.O. Davies

BEM Analysis of Semipermeable Piezoelectric Cracks
M. Denda

A Boundary Element Free Implementation Using NGF to Solve Fracture Mechanics Applications
L.S. Miers, J.C.F. Telles

Boundary Element Analysis of Cracked Sheets Repaired with Bonded Anisotropic Patches
J.F. Useche, P. Sollero, E.L. Albuquerque

Dual Boundary Element Analysis for Time-Dependent Fracture Problems in Creeping Materials
E. Pineda, M.H. Aliabadi

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