Contents

Contributors	
Preface	ix
The Mechanics of Dislocations in Strained-Layer Semiconductor Materials	
L. B. Freund	
 I. Introduction II. Selected Properties of Dislocation Fields III. An Isolated Dislocation in a Strained Layer IV. Driving Force in More Complex Situations V. Process Kinetics	1 8 18 32 56 64 64
Propagating Instabilities in Structures	
Stelios Kyriakides	
 I. Introduction II. Initiation and Propagation of Bulges in Inflated Elastic Tubes IIII. Initiation and Propagation of Buckles in Long Tubes and Pipes under External Pressure IV. Propagating Buckles in Long Confined Cylindrical Shells V. Buckle Propagation in Long, Shallow Panels VI. Summary and Discussion Acknowledgments References 	68 70 94 147 169 181 185
Plastic Flow of Crystals	
John L. Bassani	
I. Introduction II. Preliminaries III. Yield Behavior including Non-Schmid Effects IV. Flow Behavior including Non-Schmid Effects V. Hardening Behavior VI. Strain Localization VII. Closure Acknowledgments References	192 194 198 211 217 235 254 254

vi Contents

Elastic Solids with Many Cracks and Related Problems

Mark Kachanov

I.	Introduction	260
H.	Stresses and Crack Opening Displacements Associated with One Crack	
	in an Infinite Isotropic Linear Elastic Solid	261
III.	Problems of Many Cracks in a Linear Elastic Solid	280
IV.	Various Effects Produced by Crack Interactions	301
V.	Interaction of a Crack with a Field of Microcracks	321
VI.	Effective Elastic Properties of Cracked Solids	345
VII.	On Correlations between Fracturing and Change of Effective Elastic	
	Moduli. Some Comments on Brittle-Elastic Damage Mechanics	412
VIII.	Effective Elastic Properties of a Solid with Elliptical Holes	420
	Acknowledgments	437
	References	438
AUTH	OR INDEX	447
Subje	CT INDEX	453