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| Autore | Kachanov Mark |
| Titolo | Micromechanics of Materials, with Applications / / by Mark Kachanov, Igor Sevostianov |
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| Descrizione fisica | 1 online resource (723 pages) |
| Collana | Solid Mechanics and Its Applications, , 0925-0042 ; ; 249 |
| Disciplina | 620.1186 |
| Soggetti | Mechanics<br>Mechanics, Applied<br>Materials science<br>Mechanical engineering<br>Solid Mechanics<br>Characterization and Evaluation of Materials<br>Classical Mechanics<br>Mechanical Engineering |
| Lingua di pubblicazione | Inglese |
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| Livello bibliografico | Monografia |
| Nota di contenuto | preliminary table of contents: Introduction -- Background Results On Elasticity And Conductivity -- Quantitative Characterization Of Microstructures In The Context Of Effective Properties -- Inclusion And Inhomogeneity In An Infinite Space (Eshelby Problems) -- Property Contribution Tensors -- Effective Properties Of Heterogeneous Materials -- Connections Between Elastic And Conductive Properties Of Heterogeneous Materials -- Multiple Cracks: Local Fields And Crack Interactions -- Applications To Specific Materials. . |
| Sommario/riassunto | This book on micromechanics explores both traditional aspects and the advances made in the last 10–15 years. The viewpoint it assumes is that the rapidly developing field of micromechanics, apart from being of fundamental scientific importance, is motivated by materials science applications. The introductory chapter provides the necessary background together with some less traditional material, examining e. g. approximate elastic symmetries, Rice’s technique of internal |

variables and multipole expansions. The remainder of the book is divided into the following parts: (A) classic results, which consist of Rift Valley Energy (RVE), Hill's results, Eshelby's results for ellipsoidal inhomogeneities, and approximate schemes for the effective properties; (B) results aimed at overcoming these limitations, such as volumes smaller than RVE, quantitative characterization of "irregular" microstructures, non-ellipsoidal inhomogeneities, and cross-property connections; (C) local fields and effects of interactions on them; and lastly (D) – the largest section – which explores applications to eight classes of materials that illustrate how to apply the micromechanics methodology to specific materials.