1.	Record Nr.	UNINA9910299947203321
	Autore	Kachanov Mark
	Titolo	Micromechanics of Materials, with Applications / / by Mark Kachanov, Igor Sevostianov
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
	ISBN	3-319-76204-4
	Edizione	[1st ed. 2018.]
	Descrizione fisica	1 online resource (723 pages)
	Collana	Solid Mechanics and Its Applications, , 0925-0042 ; ; 249
	Disciplina	620.1186
	Soggetti	Mechanics Mechanics, Applied Materials science Mechanical engineering Solid Mechanics
		Characterization and Evaluation of Materials Classical Mechanics Mechanical Engineering
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	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.