1. Record Nr. UNINA9911020230103321

Autore	Sahimi Muhammad
Titolo	Flow and transport in porous media and fractured rock : from classical methods to modern approaches / / Muhammad Sahimi
Pubbl/distr/stampa	Weinheim, Germany, : Wiley-VCH, c2011
ISBN	9786613644657 9781280667725 1280667729 9783527636716 3527636714 9783527636709 3527636706 9783527636693 3527636692
Edizione	[2nd, rev. and enlarged ed.]
Descrizione fisica	1 online resource (735 p.)
Disciplina	530.4/15
Soggetti	Porous materials - Mathematical models Transport theory - Mathematical models Groundwater flow - Mathematical models Rocks - Permeability - Mathematical models
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 633-700) and index.
Nota di contenuto	Flow and Transport in Porous Media and Fractured Rock; Contents; Preface to the Second Edition; Preface to the First Edition; 1 Continuum versus Discrete Models; 1.1 A Hierarchy of Heterogeneities and Length Scales; 1.2 Long-Range Correlations and Connectivity; 1.3 Continuum versus Discrete Models; 2 The Equations of Change; 2.1 The Mass Conservation Equation; 2.2 The Momentum Equation; 2.3 The Diffusion and Convective-Diffusion Equations; 2.4 Fluid Flow in Porous Media; 3 Characterization of Pore Space Connectivity: Percolation Theory; 3.1 Network Model of a Porous Medium 3.2 Percolation Theory3.2.1 Bond and Site Percolation; 3.2.2 Computer Simulation and Counting the Clusters; 3.2.3 Bicontinuous Porous

Sommario/riassunto

In this standard reference of the field, theoretical and experimental approaches to flow, hydrodynamic dispersion, and miscible displacements in porous media and fractured rock are considered. Two different approaches are discussed and contrasted with each other. The first approach is based on the classical equations of flow and transport, called 'continuum models'. The second approach is based on modern methods of statistical physics of disordered media; that is, on 'discrete models', which have become increasingly popular over the past 15 years. The book is unique in its scope, since (1) the