

1. Record Nr.	UNINA9910682552803321
Autore	Sahimi Muhammad
Titolo	Applications of Percolation Theory / / by Muhammad Sahimi
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	3-031-20386-0
Edizione	[2nd ed. 2023.]
Descrizione fisica	1 online resource (XXI, 680 p. 157 illus., 36 illus. in color.)
Collana	Applied Mathematical Sciences, , 2196-968X ; ; 213
Disciplina	530.15
Soggetti	Mathematical physics Mathematical Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1: Macroscopic Connectivity as the Essential Property of Disordered Materials and Media -- Chapter 2: Classical and Poor Man's Percolation Models -- Chapter 3: Variations of the Classical Percolation Model -- Chapter 4: Characterization of Porous Media -- Chapter 5: Percolation Properties of Fracture and Fault Networks -- Chapter 6: Earthquakes and Percolation -- Chapter 7: Conductivity, Diffusivity, and Permeability of Porous Materials -- Chapter 8: Mass Transport, Mixing, and Dispersion in Flow Through Porous Media -- Chapter 9: Multiphase Fluid Flow in Porous Media -- Chapter 10: Percolation in Evolving Porous Materials: Catalyst Deactivation, Gasification, Fragmentation, and Precipitation -- Chapter 11: Percolation, and Rigidity and Elastic Properties of Materials -- Chapter 12: Morphological and Transport Properties of Composite Materials -- Chapter 13: Rheology and Elastic Properties of Network Glasses, Branched Polymers, and Gels -- Chapter 14: Vibrational Density of States of Heterogeneous Materials -- Chapter 15: Hopping Conductivity of Heterogeneous Materials -- Chapter 16: Applications of Invasion Percolation -- Chapter 17: Percolation in Random Graphs and Complex Network -- Chapter 18: Percolation in Biological Systems -- Chapter 19: Percolation Theory at the Intersection of Ecology, Hydrology, and Geochemistry -- Chapter 20: Explosive Percolation and its Applications -- Chapter 21: Directed Percolation: From Turbulent Flow to Catalysis and Brain -- Chapter 22: Percolation in Large-Scale Problems.

Sommario/riassunto

The first edition of this book was published in 1994. Since then considerable progress has been made in both theoretical developments of percolation theory, and in its applications. The 2nd edition of this book is a response to such developments. Not only all the chapters of the 1st edition have been completely rewritten and updated all the way to 2022, but also 8 new chapters have been added that describe extensive new applications, including biological materials, networks and graphs, directed percolation, earthquakes, geochemical processes, and large-scale real world problems, from spread of technology to ad-hoc mobile networks.
