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Nota di contenuto	Introduction -- Flow and transport equations -- Rock and fluid properties -- Numerical methods -- Solution of linear systems -- Single phase flow -- Two-phase flow -- The black oil model -- The compositional model -- Nonisothermal flow -- Chemical flooding -- Flows in fractured porous media -- Welling modeling -- Special topics -- Nomenclature -- Units.
Sommario/riassunto	Computational Methods for Multiphase Flows in Porous Media offers a fundamental and practical introduction to the use of computational methods, particularly finite element methods, in the simulation of fluid flows in porous media. It is the first book to cover a wide variety of flows, including single-phase, two-phase, black oil, volatile, compositional, nonisothermal, and chemical compositional flows in both ordinary porous and fractured porous media. In addition, a range of computational methods are used, and benchmark problems of nine comparative solution projects organized by the Society of Petroleum Engineers are presented for the first time in book form. The book reviews multiphase flow equations and computational methods to

introduce basic terminologies and notation. A thorough discussion of practical aspects of the subjects is presented in a consistent manner, and the level of treatment is rigorous without being unnecessarily abstract. Audience: this book can be used as a textbook for graduate or advanced undergraduate students in geology, petroleum engineering, and applied mathematics; as a reference book for professionals in these fields, as well as scientists working in the area of petroleum reservoir simulation; as a handbook for employees in the oil industry who need a basic understanding of modeling and computational method concepts; and by researchers in hydrology, environmental remediation, and some areas of biological tissue modeling. Calculus, physics, and some acquaintance with partial differential equations and simple matrix algebra are necessary prerequisites.