



# Flow and Transport in Porous Media and Fractured Rock: From Classical Methods to Modern Approaches

By Muhammad Sahimi

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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) there is currently no book that compares the two approaches, and covers all important aspects of porous media problems; and (2) includes discussion of fractured rocks, which so far has been treated as a separate subject.

Portions of the book would be suitable for an advanced undergraduate course. The book will be ideal for graduate courses on the subject, and can be used by chemical, petroleum, civil, environmental engineers, and geologists, as well as physicists, applied physicist and allied scientists that deal with various porous media problems.

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### **Editorial Review**

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#### **From the Back Cover**

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#### **About the Author**

Muhammad Sahimi is Professor of Chemical Engineering and Materials Science and the NIOC Chair in Petroleum Engineering at the University of Southern California, where he was the chairman of his Department from 1999-2005. He has also been a visiting professor in Australia and Europe, and a consultant to many major industrial corporations. For the past 30 years Professor Sahimi has been active in research on all aspects of characterization and modeling of a wide variety of porous media. He has received awards from the American Physical Society, the Alexander von Humboldt Foundation, and Russian Academy of Natural Sciences.

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