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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Footprint and Profile -- Meso-scale Modeling—the EMMS Model for Gas-Solid Systems -- Verification of the EMMS model with pseudo-particle modeling -- Extension of the EMMS Model to Gas-Liquid Systems -- From EMMS Model to EMMS Paradigm -- Partial Realization of the EMMS Paradigm -- Complete Realization of the EMMS Paradigm -- Applications in Industry -- Academic Applications of EMMS-based Models -- Many-core Programming -- Software -- Experimental Characterization of Meso-scale Behaviors -- Perspectives: Meso-

science and Virtual Process Engineering.

Sommario/riassunto

Multiscale modeling is becoming essential for accurate, rapid simulation in science and engineering. This book presents the results of three decades of research on multiscale modeling in process engineering from principles to application, and its generalization for different fields. This book considers the universality of meso-scale phenomena for the first time, and provides insight into the emerging discipline that unifies them, meso-science, as well as new perspectives for virtual process engineering. Multiscale modeling is applied in areas including: multiphase flow and fluid dynamics chemical, biochemical and process engineering mineral processing and metallurgical engineering energy and resources materials science and engineering Jinghai Li is Vice-President of the Chinese Academy of Sciences (CAS), a professor at the Institute of Process Engineering, CAS, and leader of the EMMS (Energy-minimization multiscale) Group. Wei Ge, Wei Wang, Ning Yang and Junwu Wang are professors at the EMMS Group, part of the Institute of Process Engineering, CAS. Xinhua Liu, Limin Wang, Xianfeng He and Xiaowei Wang are associate professors at the EMMS Group, part of the Institute of Process Engineering, CAS. Mooson Kwauk is an emeritus director of the Institute of Process Engineering, CAS, and is an advisor to the EMMS Group.