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Altri autori (Persone)	ShaoYali
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Nota di contenuto	Introduction -- Fundamental Concepts -- Process Simulation with Aspen Plus -- CFD Modelling Methodologies -- Eulerian Simulation of CLC Reactor -- Example of Lagrangian Simulation of CLC Reactor -- Simulation of Single Reactor for CLC -- Full-loop Simulation of CLC System -- Partial-Loop Simulation -- Binary Particle Bed Simulations in a Carbon Stripper -- Simulations of Solid-Fueled CLC Process -- Scaling Simulation of Spouted Fluidized Bed for CLC -- Single Particle Simulation of CLOU -- Carbon Capture and Sequestration combined with CLC -- Chemical Looping Applications Beyond Combustion --

Glossary.

Sommario/riassunto

The book describes the clean coal technology of chemical looping combustion (CLC) for power generation with pure CO2 capture. The focus of the book is on the modeling and simulation of CLC. It includes fundamental concepts behind CLC and considers all categories of fluidized beds and reactors, including a variety of oxygen carriers. The book includes process simulations with Aspen Plus® software using coal, natural gas, and biomass and computational fluid dynamics (CFD) simulations using both the Eulerian and Lagrangian methods. It describes various drag models, turbulence models, and kinetics models required for CFD simulations of CLC and covers single reactor, partial, and full-simulations, single/multi-stage as well as single-particle simulations, and CLC with reverse flow. A large number of examples for both process simulations using Aspen Plus and CFD simulations using a variety of fluidized beds/reactors employing both the two-fluid and Computational Fluid Dynamics / Discrete Element Method (CFD-DEM) model are provided. Modeling and Simulation of Fluidized Bed Reactors for Chemical Looping Combustion will be an invaluable reference for industry practitioners and researchers in academic and industrial R&D currently working on clean energy technologies and power generation with carbon capture. Provides a solid overview of the fundamental concepts behind CLC and fluidized beds and reactors; Describes drag, turbulence, and kinetics models; Includes process simulations using Aspen Plus® and CFD simulations.