Chemically Reacting Flow: Theory, Modeling, and Simulation, 2nd Edition
Robert J. Kee, Michael E. Coltrin, Peter Glarborg, Huayang Zhu


**DESCRIPTION**

A guide to the theoretical underpinnings and practical applications of chemically reacting flow

*Chemically Reacting Flow: Theory, Modeling, and Simulation, Second Edition* combines fundamental concepts in fluid mechanics and physical chemistry while helping students and professionals to develop the analytical and simulation skills needed to solve real-world engineering problems. The authors clearly explain the theoretical and computational building blocks enabling readers to extend the approaches described to related or entirely new applications. New to this *Second Edition* are substantially revised and reorganized coverage of topics treated in the first edition. New material in the book includes two important areas of active research: reactive porous-media flows and electrochemical kinetics. These topics create bridges between traditional fluid-flow simulation approaches and transport within porous-media electrochemical systems.

The first half of the book is devoted to multicomponent fluid-mechanical fundamentals. In the second half the authors provide the necessary fundamental background needed to couple reaction chemistry into complex reacting-flow models. Coverage of such topics is presented in self-contained chapters, allowing a great deal of flexibility in course curriculum design.

- Features new chapters on reactive porous-media flow, electrochemistry, chemical thermodynamics, transport properties, and solving differential equations in MATLAB
- Provides the theoretical underpinnings and practical applications of chemically reacting flow
- Emphasizes fundamentals, allowing the analyst to understand fundamental theory underlying reacting-flow simulations
Computer simulation of reactive systems is highly efficient and cost-effective in the development, enhancement, and optimization of chemical processes. *Chemically Reacting Flow: Theory, Modeling, and Simulation, Second Edition* helps prepare graduate students in mechanical or chemical engineering, as well as research professionals in those fields take utmost advantage of that powerful capability.

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