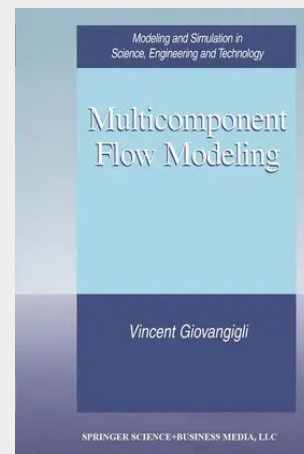


Multicomponent Flow Modeling

The goal of this book is to give a detailed presentation of multicomponent flow models and to investigate the mathematical structure and properties of the resulting system of partial differential equations. These developments are also illustrated by simulating numerically a typical laminar flame. Our aim in the chapters is to treat the general situation of multicomponent flows, taking into account complex chemistry and detailed transport phenomena. In this book, we have adopted an interdisciplinary approach that encompasses a physical, mathematical, and numerical point of view. In particular, the links between molecular models, macroscopic models, mathematical structure, and mathematical properties are emphasized. We also often mention flame models since combustion is an excellent prototype of multicomponent flow. This book still does not pretend to be a complete survey of existing models and related mathematical results. In particular, many subjects like multiphase-flows, turbulence modeling, specific applications, porous media, biological models, or magneto-hydrodynamics are not covered. We rather emphasize the fundamental modeling of multicomponent gaseous flows and the qualitative properties of the resulting systems of partial differential equations. Part of this book was taught at the post-graduate level at the University of Paris, the University of Versailles, and at Ecole Polytechnique in 1998-1999 to students of applied mathematics.

The goal of this book is to give a detailed presentation of multicomponent flow models and to investigate the mathematical structure and properties of the resulting system of partial differential equations. These developments are also illustrated by simulating numerically a typical laminar flame. Our aim in the chapters is to treat the general situation of multicomponent flows, taking into account complex chemistry and detailed transport phenomena. In this book, we have adopted an interdisciplinary approach that encompasses a physical, mathematical, and numerical point of view. In particular, the links between molecular models, macroscopic models, mathematical structure, and mathematical properties are emphasized. We also often mention flame models since combustion is an excellent prototype of multicomponent flow. This book still does not pretend to be a complete survey of existing models and related mathematical results. In particular, many subjects like multiphase-flows, turbulence modeling, specific applications, porous media, biological models, or magneto-hydrodynamics are not covered. We rather emphasize the fundamental modeling of multicomponent gaseous flows and the qualitative properties of the resulting systems of partial differential equations. Part of this book was taught at the post-graduate level at the University of Paris, the University of Versailles, and at Ecole Polytechnique in 1998-1999 to students of applied mathematics.



235,39 €

219,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780817640484

Medium: Buch

ISBN: 978-0-8176-4048-4

Verlag: Birkhäuser

Erscheinungstermin: 01.08.1999

Sprache(n): Englisch

Auflage: 1. Auflage 1999

Serie: Modeling and Simulation in Science, Engineering and Technology

Produktform: Gebunden

Gewicht: 1470 g

Seiten: 321

Format (B x H): 160 x 241 mm

