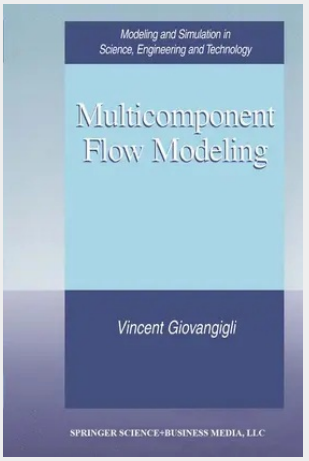
Giovangigli

Multicomponent Flow Modeling

The goal of this is book 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 phe nomena. In this book, we have adopted an interdisciplinary approach that en compasses a physical, mathematical, and numerical point of view. In par ticular, the links between molecular models, macroscopic models, mathe matical 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 multi phase-flows, turbulence modeling, specific applications, porous me dia, 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 dif ferential equations. Part of this book was taught at the post-graduate level at the Uni versity of Paris, the University of Versailles, and at Ecole Poly technique in 1998-1999 to students of applied mathematics.

The goal of this is book 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 phe nomena. In this book, we have adopted an interdisciplinary approach that en compasses a physical, mathematical, and numerical point of view. In par ticular, the links between molecular models, macroscopic models, mathe matical 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 multi phase-flows , turbulence modeling, specific applications, porous me dia, 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 dif ferential equations. Part of this book was taught at the post-graduate level at the Uni versity of Paris, the University of Versailles, and at Ecole Poly technique 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

Kundenservice Verlag Dr. Otto Schmidt KG
Neumannstraße 10, 40235 Düsseldorf | kundenservice@otto-schmidt.de | 0221-93738-997 (Inland)