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Nota di contenuto	Cover; Title Page; Copyright; Contents; Preface; List of Main Symbols; 1: Generation of Multiphase Flows; 1.1. Creation of suspensions of solid particles in a gaseous phase; 1.1.1. Creation of a homogeneous suspension of starchparticles; 1.1.2. Soot formation; 1.2. Creation of suspensions of bubbles in a liquid; 1.2.1. Example of creation of a suspension of bubbles ina liquid; 1.2.2. Influence of gravity on suspensions in pipes; 1.2.3. Slug flows; 1.3. Creation of suspensions of drops in a gas; 1.3.1. Destabilization of fluid sheets and layers 1.3.1.1. Linear study of the instabilities of semi-infinite layers of perfect fluids1.3.1.2. Linear study of the instabilities of a layer of viscous liquid, of finite thickness, in the presence of flows of incompressible perfect gases; 1.3.1.3. Linear study of the instabilities of a thin film of viscous liquid in the presence of a flow of incompressible perfect gas; 1.3.1.4. Droplet generation by vibrations in a direction normal to the liquid layer; 1.3.1.5. Generation of filaments from a liquid sheet seeded with air bubbles; 1.3.2. Formation of droplets from filaments 1.3.2.1. Linear study of the instability of an isolated perfect liquid cylinder1.3.2.2. Linear study of the instability of an isolated viscous liquid cylinder; 1.3.2.3. Experimental studies of stretched filaments; 1.3.3. Numerical simulation of primary atomization; 1.3.3.1.

Phenomenological approaches such as the Kolmogorov technique; 1.3.3.2. RANS-type approaches to primary atomization; 1.3.3.3. Direct Numerical Simulation (DNS); 1.3.4. Secondary atomization; 1.3.4.1. Drops suddenly subjected to a gaseous flow; 1.3.4.2. Drops formed from concentric jets

2: Problems at the Scale of a Particle

2.1. Force exerted by a fluid on a spherical particle; 2.1.1. Perfect incompressible fluid; 2.1.2. Incompressible viscous fluid; 2.1.2.1. General points; 2.1.2.2. Stokes' theorem; 2.1.2.3. Oseen theory; 2.1.2.4. Effect of acceleration of the particles and history term; 2.2. Heat exchanges; 2.3. Combustion of a drop of fuel in an oxidizing environment; 3: Simplified Model of a Non-reactive Flow with Particles; 3.1. Variables characterizing the flow; 3.2. Balance equations; 3.2.1. Balances for the particles; 3.2.2. Balances for the gaseous phase

3.2.3. Entropy balance and phenomenological relations

3.3. Application to the linearized study of sound propagation in a non-reactive dilute suspension; 3.4. Two-phase dilute flows in nozzles; 3.4.1. Flow with constant phase shifts; 3.4.2. Numerical solutions; 4: Simplified Model of a Reactive Flow with Particles; 4.1. Balance equations for a reactive fog; 4.1.1. Balances for the droplets; 4.1.2. Balances of the mixture; 4.1.3. Gaseous balances; 4.1.4. Entropy balance of the spray and phenomenological relations; 4.1.5. Equations of the two-phase CEDRE solver

4.1.6. Modified equations to take account of an internal temperature gradient of the drops: multi-layer model

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## Sommario/riassunto

This book - a sequel of previous publications 'Flows and Chemical Reactions' and 'Chemical Reactions in Flows and Homogeneous Mixtures' - is devoted to flows with chemical reactions in heterogeneous environments. Heterogeneous media in this volume include interfaces and lines. They may be the site of radiation. Each type of flow is the subject of a chapter in this volume. We consider first, in Chapter 1, the question of the generation of environments biphasic individuals: dusty gas, mist, bubble flow. Chapter 2 is devoted to the study at the mesoscopic scale: particle-fluid exchange of mom

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