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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 Particle2.1. 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 relations3.3. 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 andphenomenological relations; 4.1.5. Equations of the two-phase CEDRE solver
4.1.6. Modified equations to take account of an internaltemperature gradient of the drops: multi-layer model

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