

## **Multiphase flow dynamics 1 : fundamentals**

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### **Abstrak**

Multi-phase flows are part of our natural environment such as tornadoes, typhoons, air and water pollution and volcanic activities as well as part of industrial technology such as power plants, combustion engines, propulsion systems, or chemical and biological industry. The industrial use of multi-phase systems requires analytical and numerical strategies for predicting their behavior. In its fourth extended edition the successful monograph package “Multiphase flow dynamics” contains theory, methods and practical experience for describing complex transient multi-phase processes in arbitrary geometrical configurations, providing a systematic presentation of the theory and practice of numerical multi-phase fluid dynamics.

In the present first volume the local volume and time averaging is used to derive a complete set of conservation equations for three fluids each of them having multi components as constituents. Large parts of the book are devoted on the design of successful numerical methods for solving the obtained system of partial differential equations. Finally the analysis is repeated for boundary fitted curvilinear coordinate systems designing methods applicable for interconnected multi-blocks.