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Preface

This issue of the International Journal of Multiphase Flow contains contributions that reflect research results presented at the ERCOFTAC conference on Dynamics of Particle-Laden Flows, which was held in Kappel, Switzerland, July 3–5, 2000. The interest in particle-laden flows has rapidly increased in recent years, especially in cases for which there exist significant two-way coupling effects between the carrier fluid and the dispersed particle and/or droplet phase. Examples concern particle transport in turbulent flows, sprays, dilute suspensions, and particle-driven gravity currents, as well as settling, sedimentation, and re-suspension phenomena. The aim of the ERCOFTAC conference was to bring together participants from a variety of backgrounds, to present and discuss novel experimental, theoretical, and computational results concerning the dynamics of such flows.

45 scientists attended the conference, coming from Australia, Austria, Denmark, France, Israel, Germany, Great Britain, Spain, Switzerland, The Netherlands, and the United States. Among the attendees were 14 Ph.D. students who were partially supported by ERCOFTAC scholarships. The scientific program of the conference covered 24 talks organized in 9 sessions, which dealt with a wide range of dispersed two-phase flow applications. In line with the main theme of the conference, most papers were concerned with dilute cases. Sufficient time was set aside to allow for extensive discussions after the presentations and informal interaction among the participants. All three days of the meeting experienced lively—and often controversial—discussions, generating a stimulating and fruitful atmosphere.

The program closed with a plenary discussion on current status and future perspective of research in this field. It became clear that careful analysis of fundamental flow phenomena, as well as improved understanding of the related mechanisms, are still our primary tasks. Despite the impressive advances made over the past decade, there is still a need for more, and more accurate, reference data from either experiments or high-resolution simulation. Such data are essential for both the improvement of computational tools as well as the development and validation of novel theoretical concepts.

The selection of papers contained in this issue illustrates the variety and complexity of the two-phase flow problems tackled. All presenters at the meeting were invited to contribute to this volume, and the papers submitted were then refereed following standard procedures.

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