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Preface

Approximating suspended small particles, drops or bubbles as points is a natural first step in the investigation of turbulent multiphase flows, and indeed this simplified model was adopted very early in the history of the subject (see e.g. Hinze *Turbulence*, McGraw-Hill, New York, 1959, p. 460). In the late 70's and early 80's the advent of computers with (at the time, still marginally) adequate power, and the development of methods for the direct numerical simulation of turbulence, opened new paths in this line of investigation. At about the same time, the increasingly widespread technique of laser Doppler velocimetry was beginning to generate data on particle-turbulence interaction, thus imparting additional impetus to the theoretical and computational studies.

As a consequence of these developments, we are now looking back at more than three decades of intense research and several hundred papers on particle-laden turbulent flows based on the

point-particle model. We felt that it would be worth while to invite several practitioners to write review articles with a summary of their results and their views on the model itself: strengths, weaknesses and – most importantly – future prospects.

We are very grateful to the colleagues who graciously accepted our invitation. Their papers, collected in this special issue of the *International Journal of Multiphase Flow*, depict a vivid image of the current state of research on this crucial aspect of our discipline. We sincerely hope that their efforts will stimulate further progress and interest in the subject.

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Guest Editor

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