
Preface

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Biographical notes: Alireza Ashrafian is currently a Research Scientist at SINTEF (an establishment for industrial and technological research) in Trondheim, Norway. He received his PhD Degree in Fluid Mechanics from the Norwegian University of Science and Technology (NTNU) in Trondheim, Norway in 2004. His research interests include numerical simulation and modelling of turbulent flows, reactive multiphase flow modelling in porous media, chemical reactors and metallurgical systems.

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This special issue of the journal contains revised and extended versions of 16 papers selected from 77 that were presented at the *4th International Conference on CFD in the Oil & Gas, Metallurgical and Process Industries (CFD2005)*, held in Trondheim, Norway in the period 6–8 June 2005. While technical quality and introducing new fields of application were the principal criteria applied to the selection process, we also wished to capture the breadth of topics presented at CFD2005 which were well aligned to the scope of the international journal *Progress in Computational Fluid Dynamics (PCFD)*. Thus, this special issue includes topics as diverse as: the multiphase flows with particles and bubbles, Lattice Boltzman Method (LBM), Smooth Particle Hydrodynamics (SPH), Magneto-Hydrodynamics (MHD), turbulence modelling, separation, and heat and mass transfer.

Sequel to its predecessor series held from 1997 to 2003 in Melbourne, Australia, the CFD2005 conference was the first of this series which was held in Trondheim, Norway arranged by SINTEF, the Norwegian University of Science

and Technology (NTNU), and CSIRO. The conference aimed at promoting and advancing the application of CFD which is currently proving an invaluable tool in the design and optimisation of the equipments and processes in metallurgical and process, power generation, oil & gas, chemicals, food and other industries where technologies often involve challenging aspects such as multiphase flow, porous media, combustion, mass transfer by chemical reaction or phase change, non-Newtonian flow and other multi-scale phenomena.

For this archival version, the authors were invited to expand their papers beyond the rigid page limit that was imposed on the conference-version of their papers. Thereafter, each of the edited manuscripts was reviewed according to the journal's usual procedures and further revisions made as appropriate. Inevitably, to achieve the goal of having all papers ready for publication, the authors and the referees have been helpful in adhering to deadlines. For their cooperation, we extend our sincerest thanks.