

Editorial

The 32 papers collected in this issue represent a peer-reviewed selection out of the nearly 60 talks presented at the 16th Discrete Simulation of Fluid Dynamics (DSFD) International conference, held in Banff, Canada on July 23–27, 2007 and hosted by the Schulich School of Engineering, University of Calgary. This specific DSFD conference was sponsored by the Pacific Institute for Mathematical Sciences as a PIMS Sponsored Event.

The series of DSFD conferences has a long history that was born shortly after the publication of a revolutionary approach to simulate fluid dynamics in 1986. It was demonstrated that a fully discrete dynamics of simple point particles that are moving and colliding on a lattice obey the Navier-Stokes equation. Such a discovery has stimulated researchers worldwide in the use of particle-based and mesoscopic kinetic models as powerful tools to describe complex fluids and beyond in other areas of microfluidics, drops, bubbles and interfacial phenomena.

The collection of papers presented in this special issue represent the diverse disciplines regarding recent advances on the fundamentals and applications of the lattice boltzmann method for multiphase/multicomponent problems including droplet movement, capillary penetration, electrokinetics, flow through porous material and fuel cells. Other studies presented in the conference also include ballistics, turbulence, microfluidics, nanofluidics and drag reduction.

The DSFD scientific committee thanks the reviewers who carefully read the manuscripts and the sponsors who made this stimulating conference possible: Schulich School of Engineering, University of Calgary, Dr. Elizabeth Cannon (Dean of Schulich School of Engineering), Pacific Institute for Mathematical Sciences, a Scholarly Activity Grant from the University of Calgary, Harvard Apparatus Canada and Exa Inc.