

## COMPUTATIONAL MICROFLUIDICS

### POSSIBLE TRACKS:

- 300 - Multiscale and Multiphysics Systems
- 600 - Fluid Dynamics and Transport Phenomena
- 700 - Numerical Methods and Algorithms in Science and Engineering
- 1500 - Fluid-structure Interaction, Contact and Interfaces
- 400 - Biomechanics and Mechanobiology

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### ABSTRACT

Microfluidics is the study of flows at the micro-scale. It can positively impact cancer and cardiovascular disease treatment and detection, which are two main health challenges that developed countries are facing. To advance knowledge in microfluidics and develop new technologies in this field, advanced computational modelling techniques are crucial. At the scale of microfluidics, the deficiencies of continuum approaches need to be overcome and the use of statistical mesoscopic or even atomistic approaches become a necessity. This proposed mini-symposium will offer the opportunity to deeply discuss the advancements of those computational approaches for microfluidic systems. In particular, presentations on Lattice Boltzmann (LB) methods, Molecular Dynamics, Coarse-Graining, and meshless approaches for various microfluidic systems and technologies, are encouraged. Due to the length and time scales involved at the microscale and the dimensions of the potential applications, multiscale approaches will be highly encouraged in this mini-symposium. In addition, lots of microfluidic applications involve multiphysics and multiphase phenomena. This mini-symposium will welcome computational work on multiphysics and multiphase systems in microfluidics.