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MULTIPHASE FLOW AND NON-NEWTONIAN FLUID – MODELLING AND APPLICATIONS

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ABSTRACT

This mini-symposium aims to provide a forum for sharing and discussing research works in the general area of multiphase flow and non-Newtonian fluid, especially those inter-disciplinary studies that cross the traditionary boundary between solids and fluids.

Many natural and industrial processes involve dynamic motions of both fluids and solids, forming a complex multiphase flow which is often further complicated by non-Newtonian / viscoelastic / viscoplastic behaviours, phase transitions, chemical reactions, and the presence of porous media.

Examples include welding and casting, 3D printing, polymer injection moulding, fresh concrete placement, oil and grease lubrication, debris flow, sedimentation, dust storm, and many more.

This session welcome, but is not limited to, the following topics:

- Physical and mathematical models of multiphase systems and processes
- Numerical modelling of multiphase flow and non-Newtonian fluids
- Computer simulation of complex systems involving multiple fluids and solids
- Numerical and experimental studies of materials and processes involving phase transition and/or chemical reaction
- Applied studies that cross the traditional boundary of solids and fluids: 3D printing, injection moulding, concrete placement, debris flow, sandstorm, welding and casting, food processing, glass forming, and others.