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GRANULAR AND MULTIPHASE FLOWS - FROM THE FUNDAMENTAL TO THE INDUSTRIAL

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ABSTRACT

Granular media are, after water, the most widely-handled material on earth, being involved at some point in the fabrication of almost every modern commodity. As such, an understanding of these materials and their behaviours is of paramount importance to innumerable industries spanning all major sectors.

Despite this fact, our understanding of these media is - compared to our knowledge of classical, molecular materials - decidedly poor. This is due, in part, to a lack of effective communication between industry and academia, and indeed between different academic disciplines and industrial sectors.

In this Minisymposium, we aim to bring together both pure and applied scientists, as well as industry specialists from diverse fields, to facilitate interdisciplinary knowledge exchange and promote discussion and collaboration, crossing conventional boundaries. In particular, the emergence of numerical simulations for industrial applications are discussed.

The symposium will address two major features of equal importance, which cause the gap between the actual knowledge and the expertise needed by industry:

I. **Multiscale**: Understand granular and multiphase flows at various scales, from the microscale to (in particular) the macroscopic/industrial scale, and present state-of-art scale-bridging methods that can be used for industrially relevant problems.

II. **Multiphysics**: Accurately describe the behaviour of multiphase flows, by combining different modeling techniques (e.g. DEM, MD, CFD, Lattice Boltzmann, SPH…) operating at different scales and different phases.