INVITED SESSION

Particle-Based Methods in Mining and Mineral Processing

ORGANIZERS
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ABSTRACT

Mining and mineral processing involve several process stages, and in each there are different length scales and physics to be considered. Often the process stage involves more than one length scale and requires consideration of multi-physics phenomena. One example is size reduction and particle breakage by crushing and comminution, where both a granular and a slurry phase might exist simultaneously. Another example is handling and transportation of blasted ore and rock, where the particle sizes may vary between very small grains to large boulders. There are strong economic and environmental incentives for a more efficient production in the mining and mineral processing industries. Modelling and simulation provide a cost-effective means for achieving this goal. However, methodologies often need development to be a sharp decision tool in process- and product development.

In this session, we aim at highlighting possibilities and remaining challenges in using particle-based numerical methods for modelling and simulation of applications within the fields mining and mineral processing. Topics include but are not limited to development of novel computational tools, multi-physics modelling, coupled models, fluid-structure and granular-structure interaction, and simulation of applications such as comminution, fragmentation and breakage, rock drilling, transport and handling of granular materials, and related applications. We invite both pure methodological developments and novel process simulations exploiting capabilities of particle-based methods.