

## Particle modeling with deformation, fracture, slip, fragmentation, and their reverse processes for fault zone rheology

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Discrete Element Method (DEM) can deal with rheology not as input but as output for a specific material. Therefore DEM simulation can trace both the change of state due to mechanical motion and the change of rheology simultaneously for a material regardless the continuity condition. In this talk, a novel scheme to express deformation, fracture, slip, fragmentation, and their reverse processes in DEM will be introduced. Then, applying this new model for the simulation of a fault zone formation and its time evolutionary self organization phenomena, we will discuss the rheology of fault zones.