



RHEOLOGY OF GEOMATERIALS AND ENGINEERED MATERIALS UNDER EXTREME CONDITIONS: MULTISCALE CHARACTERIZATION, MODELING AND APPLICATIONS

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DESCRIPTION

Extreme mechanical and environmental conditions demand fundamental advances in the rheological science of complex materials. This special issue focuses on the rheology of geomaterials (soils, rock masses, fault gouge) and engineered materials (grouts, concrete, tailings) under extreme conditions such as high pressure, temperature, and shear. We seek contributions where multiscale characterization, modeling, and novel rheometry decode flow/deformation mechanisms, with explicit linkage to material behavior in challenging environments. Rheology must be the core subject of investigation, not merely a supplementary tool.

Scope and Topics of Interest:

- Microstructural rheology of soil stabilizers and grouts: Yielding/thixotropy mechanisms under extreme confinement.
- Non-Newtonian dynamics in particulate suspensions: Jamming, adsorption, and flow cessation.
- Viscoelasticity-driven design of composites: Thixotropic models for stability and flow control.
- Advanced rheometry: High-Pressure/Temperature systems, rough interfaces, and in-situ monitoring.
- Multiscale constitutive modeling: Bridging particle dynamics to macroscale deformation.
- Yield stress and viscoelasticity as master variables for durability.
- Rheophysics of pastes: Pressure-temperature coupling in cohesive materials

PUBLICATION SCHEDULE / HOW TO SUBMIT

Submission Deadline: 30 June 2026

The authors are kindly invited to register at [our paper processing system](#) and submit their contribution (both original papers or reviews are welcome) using a special track established for this special issue: Section/Category – “SI:Rheology of Geomaterials”. All manuscripts will undergo the standard peer-review process (single-blind, at least two independent reviewers) and will be treated in the same way as other regular articles (indexing, abstracting, immediate publication, etc.). Instructions for authors are available [here](#).

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