Advances in Civil Engineering

Special Issue on
Advances in Sustainable Approaches for Soil Improvement

CALL FOR PAPERS

The increasing population has led to a higher demand for civil infrastructure and the need for the expansion of residential areas. However, due to the scarcity of stable land, less favorable soils, such as soft soil, expensive soil, and loess, must be used for construction. Construction of structures on such soils poses challenges due to their characteristics, including high compressibility, low shear strength, and high shrink-swell potential. Notably, geofluids may play a significant role in influencing these undesired characteristics. For example, expansive soil undergoes expansion upon exposure to water and experiences shrinkage and cracking when water is lost, which significantly weakens its strength.

The presence of these soils beneath structures could lead to serious problems, such as bearing capacity problems and uneven differential settlement issues. To mitigate the failure risk and maximize land utilization, soil stabilization and reinforcement technologies are key technology. Traditionally, cement and lime-based additives have been frequently employed to enhance the hydromechanical properties of unfavorable soil. However, these traditional additives may have negative environmental and ecological impacts. Given the increasing public awareness of environmental issues and the goal of achieving net-zero greenhouse gas emissions by 2050, there is an urgent need to explore more pollution-free and sustainable alternatives and to develop advanced reinforcement techniques.

This Special Issue aims to provide a platform for researchers to highlight the influence of sustainable alternatives or advanced reinforcement techniques on the hydromechanical behavior of unfavorable soils and the underlying improvement mechanisms. We hope to illuminate scientific issues associated with stabilized and reinforced soil, encompassing laboratory testing, numerical analysis, artificial intelligence, microstructural analysis, analytical approaches, and field investigations. We welcome both original research and review articles.

Potential topics include but are not limited to the following:

- ▶ Reviewing soil stabilization challenges
- ▶ Advanced hydromechanical analysis of soil
- ▶ Integration of geofluids in soil stabilization techniques
- ▶ Assessing micro-macro soil performance
- ▶ Understanding the underlying improvement mechanisms of soil
- ▶ Artificial intelligence in predicting stabilized soil behavior
- ▶ Biologically and nature-inspired techniques for soil improvement
- ▶ Impact of climate change on soil improvement strategies
- ▶ Advancing laboratory innovations for comprehensive analysis of soil improvement
- ▶ Exploring additive manufacturing for soil stabilization

Authors can submit their manuscripts through the Manuscript Tracking System at https://review.wiley.com/submit?specialIssue=650821.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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Submission Deadline
Friday, 5 July 2024

Publication Date
November 2024