Research Data-Base
(NEA-JC Members)

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Research Interests:	Geosynthetics and geoenvironmental aspects,

study of laboratory stress-strain responses of grannular soils with/without cement mixing, DEM modeling.

Current Research Abstract

(A paper abstract, submitted to DEM Symposium 2008)

A particulate system of calculation, such as Distinct Element Method (DEM) can be a tool to understand macro- or micro-mechanical aspects of particle interaction in granular soils. In this paper, the usefulness of DEM in modeling granular soils with different grain-size characteristics is presented. Specimens prepared with spherical particles of different gradation were compressed and sheared numerically in triaxial loading conditions using the DEM program, *PFC*^{3D} (Itasca 2003). In total, eight different particle gradations were prepared with varying combinations of mean particle size, D_{50} and uniformity coefficient, U_c. DEM simulations for triaxial loading on specimens prepared at constant void ratio and constant relative density show that the strength increase of triaxial specimens, as well as compressive volumetric behavior, are associated with an increase in U_c, as well as, a decrease in D_{50}. Although the particle population used in the specimens also affected the results, thereby hinting at a limitation in DEM simulations, the overall scenario of stress-strain variations due to ball-to-ball friction, confining pressure and the aforementioned results confirm that the ideal spherical elements used in simulations can satisfactorily simulate the stress-strain and volumetric change trend for granular soils.