



## Soil Mechanics, Soil Dynamics and Physical Modeling Laboratories



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### Experimental Evaluation of nano silica effects on the geotechnical properties of sandy soils

#### Abstract

The application of nanotechnology in geotechnical engineering is not plain and limited yet useful researches have been done in this area. in this research the goal was to determine the performance of nano and micro silica on the Firoozkooh sand which contains lime in two separated parts with density, uniaxial compression and density test. Then during uniaxial testing the effects on strength and secant modulus of different percentages of nano and micro silica on sand containing lime at different curing periods was examined. samples was tested with a fixed amount of lime and different percentage of nano and micro silica. in the second part the consolidated and undrained triaxial test was done. In this series of experiments they undrained behavior of sand containing lime after adding different percentage of nano and micro silica was compared. this study was consisted of dilative-contractive behavior of samples, internal friction angle, cohesion and finally the friction angle in critical state of soil and brittleness index. The result of both part of these test shows that nano silica has a much more positive effects on latter parameters than micro silica.