
Three Techniques for Fabric Viewing as Applied to Shear Distortion of a Clay

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Abstract: A knowledge of the microscopic physical behavior of soils is important and necessary for the correct interpretation of observed macroscopic deformations in soil bodies. This study was designed to determine the particular pattern and distribution of extensive fabric alteration accompanying shear strains in a clay specimen subjected to triaxial stress combinations. The techniques used for observing these microscopic features were polarized light microscopy of thin sections from Carbowax-fixed clay samples, scanning electron microscopy of thinly coated cleavage surfaces in vacuum desiccated specimens, and transmission electron microscopy of metal-shadowed carbon replicas made of similar cleavage surfaces. All three methods showed that the zone of extensive fabric alteration in the triaxially sheared bodies was planar and had an average thickness of about 30 μ .

Most clay particles in the zone were aligned parallel to the zone direction. The results of the study also demonstrated the particular merits of each of the three techniques for fabric viewing.

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