PARALLEL PLATE INTERACTION IN CLAY-WATER SYSTEMS

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ABSTRACT

Two ranges may be distinguished in the discussion of the interaction between parallel clay plates in a clay–water system, *i.e.* a short range and a long range. In practice, these regions dominate the problems encountered in foundation engineering (long range interaction) and in the study of the compaction of sedimentary rocks (short range interaction).

The quantitative treatment of the long range interaction (or osmotic swelling) deals with the evaluation of the electric double layer repulsion and of the van der Waals attraction forces and other possible sources of attraction.

The treatment of the short range interaction involves the evaluation of van der Waals, electrostatic and adsorption forces. The net effect of these three forces is accessible to measurement from adsorption–desorption isotherms of water vapor on an expandable clay. An analogous treatment can be given for clay–organic-hydrocarbon systems, and applied to the problem of retention of hydrocarbons by source rocks.