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“Electrokinetic Feature of Kaolinite and Other Selected Two Layer Silicate Minerals”

The surface charge feature of two layer clay minerals such as kaolinite, halloysite, antigorite, chrysotile etc. is complicated by their platy shape and anisotropic crystal structure which exposed silica tetrahedral layers (001 basal plane), aluminum or magnesium octahedral layers (001 basal plane) and broken silica tetrahedral and aluminum or magnesium octahedral bonds at the edge surface (010 basal plane). In this paper, the surface charge of kaolinite is reviewed. Surface force measurements were conducted to interrogate the basal planes of kaolinite particles (silica tetrahedral face and alumina octahedral face). These colloidal force measurements reveal that the silica tetrahedral face of kaolinite is negatively charged at $\text{pH} > 4$, whereas the alumina octahedral face of kaolinite is positively charged at $\text{pH} < 6$, and negatively charged at $\text{pH} > 8$. This new information would be useful to understand mechanical properties of such suspensions such as yield stress, and dewatering characteristics.



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