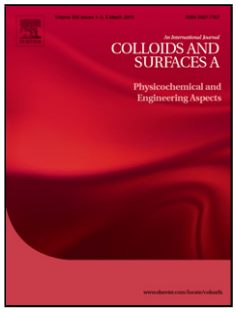

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Interactions between kaolinite clay and AOT

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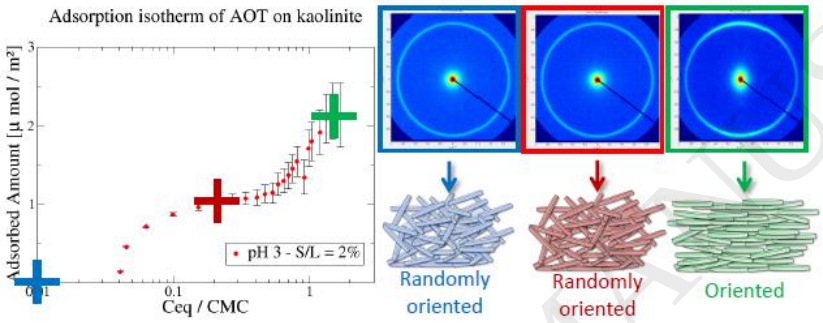
Graphical abstract



A R T I C L E I N F O

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A B S T R A C T

Interactions between kaolinite (KGa-2) and a typical anionic surfactant bis(2-ethylhexyl) sulfosuccinate sodium (AOT) have been study to obtain a better knowledge of this system. Firstly, adsorption isotherms of AOT on kaolinite are realized as a function of pH. Stability experiments have been performed between the surfactant and the clay mineral and the bed sediments structure have been studied with Small Angle X-ray Scattering (SAXS).In acidic media, the shape of the adsorption isotherm leads to the following suggestions: firstly, for surfactant concentration below the CMC a surfactant monolayer is adsorbed on the positively charged edge surfaces, and then, for surfactant concentrations above the CMC, a bilayer is adsorbed on the edge surfaces. Consequently, in the first case, the surface becomes hydrophobic and in the second case, the surface becomes hydrophilic and this assumption is verified with hydrophobicity tests. Under alkaline conditions no surfactant is adsorbed on surfaces confirming the adsorption on the edge surfaces in acidic conditions. In agreement, with previous studies [1,2] significant stabilization of kaolinite suspensions can be observed in the presence of high surfactant concentration, in both pH conditions. Finally, structural studies by SAXS provide data about the organization of particles in the bed sedimentation.

Keywords:
Kaolinite Bis(2-ethylhexyl) sulfosuccinate sodium AOT Adsorption Stabilization Orientation