



Uptake of anionic surfactants from aqueous medium by using porous anionic clays with tailored properties

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ABSTRACT

Layered double hydroxides, containing Mg or Zn as divalent cations in the brucite - like layer and the derived mixed oxides obtained after the calcination process of the clays have been used to remove the anionic surfactant, sodium dodecylbenzenesulfonate, from aqueous solutions. The property of the layered clay to reconstruct its structure by using its structural “memory effect” has been used as a controlled variable parameter during the adsorption/intercalation processes of the tested anionic surfactant. The extent of sodium dodecylbenzenesulfonate removal decreases in the order: 2ZnAILDH550 > 2MgAILDH550 > ZnAILDH550 > MgAILDH550 > REZnAl550 > REMgAl550 > ZnAILDH > MgAILDH. A maximum removal capacity, equal to 847 mg/g, was obtained. The results point out that specific textural features and electrostatic properties of the clay matrices can be used as tailored parameters during the removal process of the anionic surfactants from wastewaters.

Keywords: Anionic surfactant; Anionic clays; Removal capacity

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