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Effects of natural organic matter with different properties on levofloxacin adsorption to goethite: experiments and modeling

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Abstract

Adsorption of levofloxacin (LEV) to goethite in the pH range of 3-10, and in the absence or presence of natural organic matter (NOM) represented by nine types of humic acid (HA) and fulvic acid (FA), was studied using batch experiments. The adsorption of LEV to goethite was weak and showed a maximum around pH 5.8. Adding NOM to goethite strongly increased LEV adsorption to goethite, but hardly affected its pH dependency. The adsorption envelopes were well fitted to a linear additive model, in which LEV adsorption to goethite was simulated with the Charge Distribution Multi-Site Complexation (CD-MUSIC) model, and LEV adsorption to NOM was simulated with the Langmuir model. The fitted affinity constants ($\log K$) for LEV adsorption to NOM were significantly and positively correlated with the SUVA (specific ultraviolet absorbance at 280 nm) values of NOM, and negatively

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