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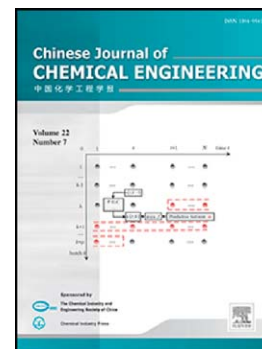
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Adsorption of 2-naphthalenesulfonic acid/sulfuric acid/sulfurous acid from aqueous solution by iron-impregnated weakly basic resin: equilibrium and model

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Abstract Commercial grade weakly basic resin D301 was impregnated with iron through a simple method using ferric chloride. Experiments for single, bisolute and trinary competitive adsorption were carried out to investigate the adsorption behavior of 2-Naphthalenesulfonic acid (NSA), sulfuric acid and sulfurous acid from their solution at 298K onto the novel hybrid iron impregnated D301(Fe-D301). Adsorption affinity of NSA on Fe-D301 was found to be much higher than that of sulfuric acid, while adsorption affinity of sulfuric acid was slightly higher than that of sulfurous acid. The data of single-solute adsorption were fitted to the Langmuir model and the Freundlich adsorption model. The non-ideal competitive adsorbed model coupled with the single-solute adsorption models were used to predict the bisolute and trinary-solute competitive adsorption equilibria. The NICM coupled with the Langmuir model yields the favorable representation of the bisolute and trinary-solute competitive adsorption behavior.

Keywords 2-naphthalenesulfonic acid; hybrid iron impregnated D301; adsorption; non-ideal competitive adsorbed model; model; equilibrium

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