



Efficient removal of humic acid in aqueous solution using polyaniline adsorbent

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ABSTRACT

Polyaniline adsorbent prepared by chemical oxidation was developed to remove the humic acid (HA) in aqueous solution. The adsorbents showed the high adsorption capacity for aqueous HA with the maximum adsorption amount 126.58 mg g^{-1} , and the adsorption isotherm obeyed the Langmuir model. The adsorption kinetics followed an initial diffusion-controlled and then an attachment-controlled adsorption process. The HA adsorption was not much impacted in the presence of Na^+ , K^+ , while Ca^{2+} ion in aqueous solution can evidently enhance the HA adsorption. The HA adsorption on polyaniline decreased with increasing solution pH owing to the electrostatic interaction between imine and amine of polyaniline and dissociated HA. The HA molecules adsorbed on the polyaniline can be effectively desorbed in 0.1 M NaOH solution, and regenerated adsorbent can be repeatedly used in the subsequently adsorption–regeneration cycles.

Keywords: Polyaniline; Humic acid; Adsorption; Adsorption kinetics; Desorption; Electrostatic interaction; Water treatment

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