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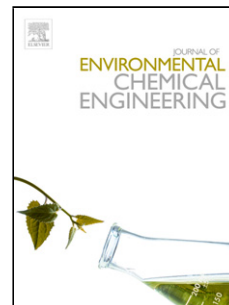
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Adsorption Study of Modified Coal Fly Ash with Sulfonic Acid as a Potential Adsorbent for the Removal of Toxic Reactive Dyes from Aqueous Solution: Kinetics and Thermodynamics

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ABSTRACT

Great emphasis is being put in to develop green, efficient and inexpensive adsorbent in recent years. In this study, we demonstrate the potential of coal fly ash (CFA) materials as environmental pollutant adsorbent. The Sulfonic acid functionalized heat and alkali treated CFA (HATF-SO₃H), is synthesized by condensation of 3-mercaptopropyltrimethoxysilane (3-MPTS) and heat and alkali treated CFA (HATF) followed by oxidation of surface thiol groups by H₂O₂ to sulfonic acid groups. The as-synthesized product is used to remove toxic and reactive dyes i.e. Malachite green (MG) and Rhodamine 6G (R6G), which are the main contaminant from the dye manufacturing and textile finishing. The efficiency of the dye adsorption on HATF-SO₃H surface was investigated under various experimental parameter such as adsorbent dose, contact time, stirring speed, pH, and

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