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Treatment of dye wastewater by functionalization of bentonite-Methylene blue with sodium persulfate (Article)

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Abstract

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Bentonite has been effectively used in many studies for the removal of methylene blue (MB) laden waste waters. This is due to its high swelling ratio, good adsorptive properties and environmentally friendly characteristics. In spite of this, prolonged use renders the BMB non-functional and cause for discard. Sodium persulfate (SPS), has been reported to be an excellent flocculating agent for the functionalization of spent adsorbent due to some of its unique properties. In this study, the functionalization of spent bentonite-methylene blue (BMB) adsorbent in dye wastewater treatment was carried out using SPS at varying temperature conditions. Results revealed that the addition of SPS to MB-loaded adsorbent demonstrated efficient adsorption, high flocculation efficiency as well as faster equilibrium (60 min). The BMB loaded adsorbent showed 95% removal efficiency up to three cycles. A plausible mechanism was proposed and discussed on the basis of the results. Thus, exhausted BMB was found to be effectively used for treatment of coloured wastewater on an industrial scale.

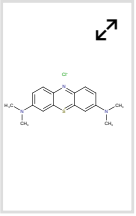
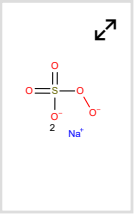
SciVal Topic Prominence

Topic: Adsorption | Dyes | Intraparticle diffusion

Prominence percentile: 99.912

Chemistry database information

Substances


Author keywords

Bentonite | Dye wastewater | Functionalization | Methylene blue | Sodium persulfate

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