عنوان مقاله:

Kinetics of photocatalytic degradation of methylene blue by ZnO-bentonite nanocomposite

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خلاصه مقاله:

The present study reports, the synthesis of ZnO-bentonite nanocomposite by the incorporation of ZnO with bentonite clay. The nanocomposite was characterised by XRD and SEM. ZnO-bentonite was effectively used for removal of Methylene Blue (MB). Removal of MB takes place by photocatalytic degradation and adsorption. Photocatalytic degradation of MB occurs by advanced oxidation process. The factors affecting photocatalytic degradation like pH, initial dye concentration, contact time and photocatalyst dose are investigated. Optimum pH was 8 and contact time was 80 min for photocatalytic degradation of MB. The kinetic study shows that adsorption follows pseudo-second-order kinetics. Adsorption was also described by Langmuir and Freundlich isotherms. Adsorption isotherm found to follow Langmuir isotherm. The monolayer coverage capacity was observed to be 62.5 mg/g. The amount of dye adsorbed was 252.7 mg/g for 0.2 g/L photocatalyst dose at 60mg/L MB concentration.

کلمات کلیدی:

Methylene Blue, photocatalytic degradation, ZnO-bentonite, advanced oxidation process