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Catalytic decolorization of acid blue 29 dye by H₂O₂ and a heterogeneous catalyst

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The montmorilloniteK10-Cu (II) ethylenediamine (MMTK10-Cu(en)₂) catalyst has been prepared by intercalation of copper-ethylenediamine [Cu(en)₂]²⁺ complex onto the montmorillonite K10. The intercalation process is confirmed by SEM, FTIR, XRD, and TGA measurements. The decolorization of the acid blue29 was conducted using MMTK10-Cu(en)₂ in the presence of hydrogen peroxide. The effect of different parameters such as the concentration of hydrogen peroxide and the dye and the temperature on the decolorization efficiency was studied. It was found that the efficiency increases with increasing the concentration of reactants and the temperature. The results indicated that complete removal of AB29 was achieved in 15 min when the concentrations of H₂O₂ and AB29 were 0.4 and 5x10⁻⁵ M respectively and 0.1 g of the catalyst at 30°C. The activation parameters of the decolorization process were determined.

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