



One-step hydrothermally synthesized ferrite@polymeric nanoparticles for decolorization of crystal violet

Hassan Alijani^a, Mostafa Hossein Beyki^b, Reyhaneh Kaveh^c, Yousef Fazli^{d,*}

^aDepartment of Chemistry, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran, email: alijani.hassan89@gmail.com

^bSchool of Chemistry, University College of Science, University of Tehran, Tehran, Iran, email: hosseinbakim@gmail.com

^cChemistry Department, Sharif University of Technology, Tehran, Iran, email: reyhanehkaveh@yahoo.com

^dDepartment of Chemistry, Faculty of Science, Arak Branch, Islamic Azad University, Arak, Iran, Tel./Fax: +98 86 33670017; emails: yousef.fazli@gmail.com, y-fazli@iaau-arak.ac.ir

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ABSTRACT

An efficient dye decolorization platform was developed through one-step hydrothermally route based on magnetic polymeric resin and employed in aqueous crystal violet (CV) adsorption. The polymer nanohybrid composed of ZnFe₂O₄ and hydroxybenzoic acid–resorcinol resin as metal and organic fragment, respectively. Several techniques such as X-ray diffraction, N₂ – adsorption desorption, vibration sample magnetometer, field emission scanning electron microscopy and Fourier transform infrared spectroscopy were employed for characterization of as-prepared nanohybrid. CV adsorption showed low equilibrium time within 10 min with the adsorption capacity of 83.3 mg g⁻¹. Regeneration of the sorbent performed by methanol–HNO₃ solution. The thermodynamic study revealed that adsorption follows the endothermic path as well as it is spontaneous.

Keywords: Crystal violet; Decolorization; Polymer; Resin

* Corresponding author.