

عنوان مقاله:

Preparation of Kissiris/TiO₂/Fe₃O₄ /GOx biocatalyst: Feasibility study of MG decolorization

محل انتشار:

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خلاصه مقاله:

Titanium dioxide (TiO₂) and Fe₃O₄ magnetite particles were coated on spherical Kissirises; glucose oxidase (GOx) enzyme was immobilized on Kissiris/Fe₃O₄/TiO₂ by physical adsorption. This catalyst was analyzed by a scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), and energy dispersive X-ray (EDX) measurements. The performance of the prepared biocatalyst in the decolorization of Malachite Green dye was investigated. The optimal operation parameters were 20 mg/L, 20 mM, 5.5 and 40 °C for initial dye concentration, initial glucose concentration, pH and temperature, respectively. Under these conditions, a 95% Malachite Green decolorization efficiency was obtained after 150 min of reaction by using 1 g of prepared heterogeneous bio-Fenton catalyst. In this process, in contrast to a conventional Fenton's reaction, external hydrogen peroxide and ferrous ion sources were not used. The effect of various reaction parameters such as initial concentration of dye, amount of catalyst, concentration of glucose, pH value and temperature on MG decolorization efficiency was studied

کلمات کلیدی:

Decolorization, Glucose oxidase, Kissiris, Heterogeneous Bio-Fenton

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