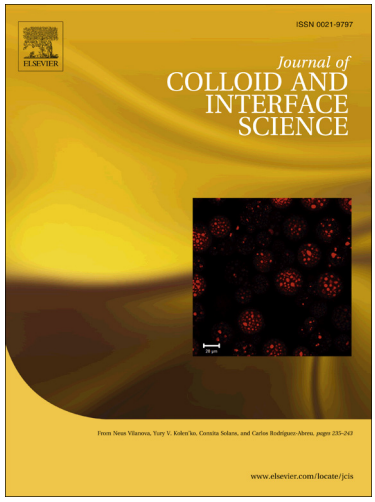

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Adsorption of methyl orange and salicylic acid on a nano-transition metal composite: kinetics, thermodynamic and electrochemical studies

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Abstract

In this work synthesis of Mn-nanoparticles (MnNPs) supported on the Schiff base modified nano-sized SiO_2-Al_2O_3 mixed-oxides (Si/Al) and its implementation as an adsorbent for the removal of organic pollutions such as methyl orange (MO) and salicylic acid (SA) was investigated. Si/Al were functionalized by grafting Schiff base ligand and in the next step, MnNPs were prepared over the modified nano sol–gel Si/Al. Structures and adsorption characteristics of the obtained organometallic–modified SiO_2/Al_2O_3 mixed oxide were studied by several methods such as elemental analysis, Diffuse reflectance UV-Vis spectroscopy, FT-IR spectroscopy, nitrogen adsorption/desorption, scanning electron microscope (SEM), transmission electron microscope (TEM), energy dispersive X-ray (EDX), inductively coupled plasma (ICP-AES), Electron Paramagnetic Resonance (EPR), electrochemical impedance spectroscopy (EIS) and cyclic voltammetry (CV). EPR data of the immobilized manganese ions resulted that the transition state of active sites in the nano-

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