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REMOVAL OF HEXAVALENT CHROMIUM FROM WATERS BY MEANS OF A TiO_2-Fe_3O_4 NANOCOMPOSITE

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Abstract

This paper aims to establish the capacity removal of hexavalent chromium [Cr(VI)] from wastewaters using a TiO_2 – Fe_3O_4 based nanocomposite. Latest researches in the field point adsorption as a better option for removal of heavy metal ions from waters, this method being more efficient and cost effective, in comparison with other advanced methods like reverse osmosis, ion exchange, nanofiltration, etc. Based on this information, the goal of this work had as purpose the obtaining, characterization and adsorption testing of a TiO_2-Fe_3O_4 based nanocomposite used for removal of Cr(VI) from waters. The magnetite nanoparticles were obtained using a classical co-precipitation method, while TiO_2 nanoparticles were obtained by hydrothermal sysnthesis, the magnetite being afterwards coated with TiO_2 by mixing. The nanocomposite was characterized by X-Ray diffraction, scanning electron microscopy (SEM) and The results indicated a high efficiency for Chromium removal (higher than 95%), the nanocomposite being a promising material for future adsorption tests.

Key words: characterization techniques, environmental applications, magnetic nanoparticles, nanocomposite

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