

MCM41/Fe₃O₄/EDTA Materials from Removal Different Cation from Waste Water

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Extended Abstract

MNPs functionalization with different materials (silica network, carboxylic acid, amino acids, organic acid, polymers), lead to advance materials with core-shell structure, these structures being potential candidates for waste water decontamination. The advantages that recommend these structures are especially related to the improved dispersion and stability of core shell nanostructures during application and, the shell can also act as an active layer which can bind, selectively, desired species. Mesoporous silica such as MCM 41, MCM 48, are used widely for removal of environmental pollutants, (especially heavy metals), due to very low toxicity, and high capacity for adsorbing[1].

In this work the synthesis and characterization of MCM41/Fe₃O₄/EDTA are presented, their final purpose being to be used in removing different cation from waste water and water softeners. The materials synthesis was done in two stages. First by the Fe₃O₄/EDTA was obtained by co-precipitation method in alkaline media. Second by MCM41/Fe₃O₄/EDTA was obtained by sol-gel method. The obtained materials were characterized by FT-IR spectroscopy, scanning electron microscopy, XRD-diffraction, BET etc. The absorption capacity was evaluated by UV-Vis spectroscopy.

References

- [1] P. K. Toimenov, R. L. Klinger, G. L. Marchin, and K. J. Klabunde, "Metal oxide nanoparticles as bactericidal agents," *Langmuir*, vol. 18, pp. 6679-86, 2002.