Magnatite Nanoparticles Coated with Oleic Acid for Removal of Toxic Elements from Water

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Our project aim to use of magnetic nanoparticles coated with oleic acid as adsorbents for Lead removal from contaminated water, which provides a candidate approach for separating and removing the contaminants by applying external magnetic fields.Magnetite nanoparticles coated with oleic acid were prepared by a co-precipitation procedure with cheap and environmentally friendly iron salts and oleic acid. 1.99 g (0.01 mol) FeCl2-4H2O, 5.41 g (0.02 mol) FeCl3 -6H2O was dissolved in 50 mL distilled water. Ammonium hydroxide was added slowly at a rate of one drop per second to raise the pH to 9.5. After 3 hours of stirring oleic acid was added slowly at a rate of one drop per second. Nitrogen gas could be used in a closed system to overcome the oxygen oxidation of magnetic nanoparticles and to reduce the particle size in comparison to protocols without oxygen removal. Then, the precipitate Fe3O4 nanoparticles were washed by repeated cycles of centrifugation and re-dispersion in distilled water. Then, the final products were dried in a vacuum oven at room temperature for 24 h, and the Fe3O4 nanoparticles were finally obtained. 100mg/dl of nanoparticles incubated with water diluted lead (50 ppb) in Rotating Incubator at 25 C° For 24 hours, magnetic nanoparticles will be removed by applying external magnetic field, the Lead concentration was measured by Royal Scientific Society of Jordan. We concluded that the Magnetic nanoparticles were economically efficient in removing heavy metal from water.

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