Magnetite Nanoparticles Coated with Oleic Acid for Removal of Toxic Elements

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Our project aims to use of magnetic nanoparticles coated with oleic acid as adsorbents for Lead removal out of contaminated water which provides a candidate technique for separating and removing contaminants by applying external magnetic fields. Magnetite nanoparticles coated with oleic acid have been processed through co-precipitation with cheap and environment friendly iron salts and oleic acid. Magnetic nanoparticles are removed by applying external magnetic field. Magnetic nanoparticles incubated with water diluted lead (50 ppb) in rotating incubator at 25 C° for one day resulted in that more than 84% of lead were removed and the lead concentration became (8 ppb). According to the U.S EPA, the maximum allowable concentration of lead in public drinking water at 15 µg/L equals to (15ppb) which means that it turned into drinkable water. Toxic metal ions such as: Lead (Pb), Mercury (Hg), Zinc (Zn) etc. becomes a severe environmental and public health issue. Solving this worldwide problem that affects us and the planet (including marine life), our project is the most efficient technique that should be applied. This technique can be applied for both surface and ground contaminated water and can remove all toxic metals with high efficiency and low significant toxicity. World and science are constantly evolving and many people are suffering from lack of drinking water not to mention the contaminated water. A laboratory hard work supported by those who believe in saving the planet can make this technique a worldwide cost-effective solution for providing drinkable water for the next generations.

Awards Won: