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Preparation and application of alginate-graphene oxide magnetic beads to remove Zn^{2+} cation in aqueous solutions

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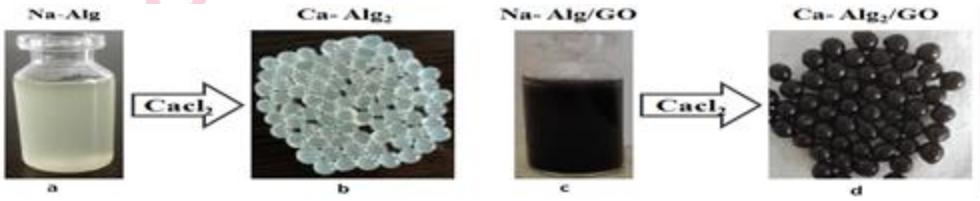
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In this study, alginate has been used as a magnetic particle of graphene oxide absorbents to remove Zn^{2+} ions from aqueous solutions. The results demonstrated the following: At pH 6 in 180 min, zinc removal effectiveness was found to be optimal. [1]. The effectiveness of the removal process was also enhanced by increasing the initial concentration and adding more adsorbents. The Langmuir adsorption isotherm The model of zinc removal has been more closely matched to the test results. Conversely, the adsorption kinetics of zinc were in accordance with a model called Pseudonquadratic.

Thermodynamic studies showed that the removal of zinc on the alginate-graphene oxide magnetic composite nanofibers is endothermic and the adsorption rate increases with increasing ambient temperature [2]. To identify the appearance and properties of absorbent nanocomposites, an analysis was performed on XDR, TEM, FESEM and VSM with a view to confirming the synthesis steps. TEM and FESEM analysis showed that the mGO/Alg Beads nanocomposite was a porous nanoabsorbent and a magnetite nanoparticle with an average diameter of 33.69 nm could be easily seen on the surface of the nanocomposite. Results from desorption tests show that, at the end of 5 absorption and desorption cycles, 90% of nanomaterials are able to be effectively used. Finally, these nanocomposites are very promising because of being easy, fast, healthy, cost-effective and highly efficient separation of pollutants[3].

Keywords: Magnetic beads, Alginate, Graphene oxide, Zinc, Removal, Aqueous solution



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