GO-FeO Fluid: A Novel Method to Remove Microplastics

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Microplastic pollution is a severe threat to aquatic ecosystems, necessitating innovative approaches for efficient removal. This research introduces a method for eliminating microplastics by synthesizing graphene oxide (GO) using the Hummers method and creating a Ferro-Induced Graphene Oxide (GO-FeO) nano-particle composite system. The Hummers method ensures the production of high-quality GO, while the integration of FeO nanoparticles enhances the composite's adsorption capabilities. Experimental results demonstrate the efficiency of the GO-FeO composite in capturing microplastics the 9 most common microplastics: High-Density Polyethylene (HDPE), Low-Density Polyethylene (LDPE), Nylon, Polyethylene Terephthalate (PET), Polyester, Phosphatidylserine (PS), Polypropylene (PP), Polyvinyl Chloride (PVC), Laundry Waste Water. This method surpasses current removal methods in terms of effectiveness and efficacy. This research not only contributes to the arsenal of microplastic removal technologies but also introduces a composite system that can be employed in various microplastic sources: washing machines, stormwater runoff, tire abrasion, city dust, etc. This study emphasizes the urgency of preventing microplastic entry into water bodies. Future research directions include refining the GO-FeO composite system for larger-scale applications. This research serves as progress towards mitigation of microplastic pollution.

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