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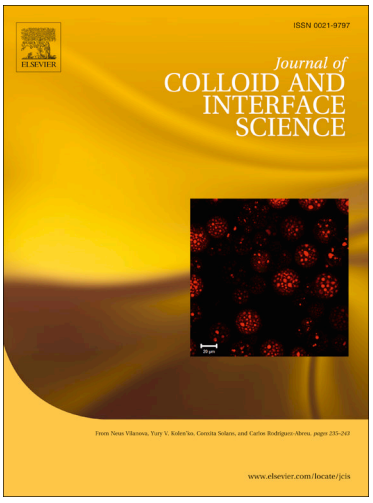

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Graphene Oxide hydrogel Particles from Microfluidics for Oil Decontamination

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Keywords: microfluidics; graphene oxide; hydrogel; particle; emulsion

Abstract: In this work, we present a simple droplet microfluidic approach for generating graphene oxide (GO) hydrogel composite particles for oil decontamination. By stepwise solvent exchanges, the resulted hydrophilic GO hydrogel composite particles were transferred into organic media without any chemical modifications. As the GOs were locked tightly in hydrogel network, they were hardly changed during the processes of solvent exchanges. Thus, their polar surfaces remained in direct contact with the exchanged organic media, which indicated that the transferred GO particles were capable of effectively adsorbing polar impurities. Attractively, by encapsulating hollow cores and additional magnetic nanoparticles into the emulsion templates during the fabrication, the GO hydrogel composite particles were imparted with hierarchical porous structures and controllable movement capability, both of which could improve their efficiency of impurities adsorbing. These features make the GO hydrogel composite particles described here ideal for oil decontamination.