

Journal of Colloid and Interface Science

Removal of toxic pollutants from aqueous media using poly (vinyl imidazole) crosslinked chitosan synthesised through microwave assisted technique

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<https://www.sciencedirect.com/science/article/pii/S0021979719301420>

Abstract

Water contamination owing to the presence of toxic organic chemicals/heavy metals are considered to be one of the serious global environmental issues. Various advanced polymeric materials have been developed and used for the separation/removal of these contaminants. To consider the afore-mentioned problem, recently in authors' laboratory, an efficient biopolymeric adsorbent has been prepared using poly (vinyl imidazole) crosslinked chitosan (cl-Ch-pVI) through a simple microwave-assisted free radical polymerization technique. The structural characteristics of the developed hydrogel have been studied in details. The copolymer cl-Ch-pVI reveals excellent gel characteristics, demonstrates superior efficiency towards removal of toxic Cr(VI) from aqueous solution. Moreover, the copolymer also shows outstanding adsorption capacity to remediation of organic dye reactive black 5 (RB5), which manifests the potential application of synthesised copolymer in wastewater treatment.