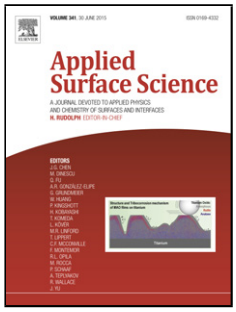

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Synthesis of Hydrous Zirconium Oxide-Impregnated Chitosan Beads and Their Application for Removal of Fluoride and Lead

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Graphical abstract

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Abstract

A composite adsorbent capable of simultaneous removal of both cationic and anionic contaminants from aqueous solutions was developed by impregnating hydrous zirconium oxide (HZO) into chitosan beads (CB). The optimal mass ratio of chitosan to HZO was 2:2. The composite adsorbent (HZOCB) had the rugged surface (52.74 m^2 g^{-1}) with irregular cracks caused by HZO inclusion and amine functional groups. The rate of Pb^{2+} adsorption by