

Removal of Per- and Polyfluoroalkyl Substances (PFASs) Contaminants from the Aqueous Phase Using Chitosan Beads

Authors : Rahim Shahrokhi, Junboum Park

Abstract : Per- and Polyfluoroalkyl Substances (PFASs) are environmentally persistent halogenated hydrocarbons that have been widely used in many industrial and commercial applications. Recently, contaminating the soil and groundwater due to the ubiquity of PFAS in environments has raised great concern. Adsorption technology is one of the most promising methods for PFAS removal. Chitosan is a biopolymer substance with abundant amine and hydroxyl functional groups, which render it a good adsorbent. This study has tried to enhance the adsorption capacity of chitosan by grafting more amine functional groups on its surface for the removal of two long (PFOA and PFOS) and two short-chain (PFBA, PFBS) PFAS substances from the aqueous phase. A series of batch adsorption tests have been performed to evaluate the adsorption capacity of the used sorbent. Also, the sorbent was analyzed by SEM, FT-IR, zeta potential, and XRD tests. The results demonstrated that both chitosan beads have good potential for adsorbing short and long-chain PFAS from the aqueous phase.

Keywords : PFAS, chitosan beads, adsorption, grafted chitosan

Conference Title : ICEC 2024 : International Conference on Environmental Chemistry

Conference Location : London, United Kingdom

Conference Dates : March 11-12, 2024