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Biosorption and selective separation of acetophenone and 1-phenylethanol with polysaccharide-based polymers

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Abstract

A polysaccharide-based polymer (abbrev., SMP) was prepared via the crosslinking of starch with 4,4-methylene diphenyl diisocyanate and employed as an adsorbent for selective separation of acetophenone (AP) and 1-phenylethanol (PE) which coexist extensively in petrochemical by-products and effluents. The successful crosslinking was proved by FTIR and XPS, and the rough morphology as well as porous structure was also demonstrated in XRD, SEM and N_2 adsorption-desorption analysis. Using SMP as adsorbent, the adsorption kinetics and isotherms were both investigated in single-component system. Both kinetic and thermodynamic parameters of the adsorption process were obtained. Further thermodynamic investigation indicated that the