

Development of biosorbent using poly(allylamine hydrochloride) for removal of Pt(IV) from aqueous solution

모주연, 이시연, 원성욱, 윤영상*
전북대학교
(ysyun@chonbuk.ac.kr*)

In this study, poly(allylamine hydrochloride) (PAA/HCl), with a large number of amine groups in a molecule, was cross-linked with *E.coli* biomass in a simple and cost-effective method. The sorption performance of PAA/HCl-modified biomass was greatly affected by the amount of polymer (PAA/HCl), pH value and cross-linker epichlorohydrin (ECH). Thus surface modification conditions of *E.coli* using PAA/HCl were quantitatively analyzed and optimized through response surface methodology (RSM). A three-level Box-Behnken factorial design was performed, and second order polynomial model was generated to describe the effect of PAA/HCl and ECH on the Pt(IV) uptake ($R^2= 0.9910$). The optimum conditions for PAA/HCl modification were found to be 4.29 g PAA/HCl and 0.15 mL ECH, with 10 g of dried *E.coli*. Sorption capacity of PAA/HCl -modified biomass increased 4.52 times comparing that of the raw biomass. Therefore, this simple and cost-effective method could be a useful modification tool for development of a high performance and potential biosorbent for removal Pt(IV).