

Melamine-impregnated alginate capsule for selective sorption of Pd(II) from the Pt(IV) and Pd(II) aqueous mixture

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Separation and recovery of high-purity precious metal ions from aqueous mixture solution has become a vital challenge. So far, the reported methods have lack of efficiency in separation factors. Especially, it is difficult to separate Pt(IV) and Pd(II) from their aqueous mixture, due to their similar chemical properties. In order to improve the separation efficiency for Pt(IV) and Pd(II), a novel capsule type sorbent (melamine-impregnated alginate capsule) was designed for selective sorption of Pd(II) from Pt(IV)-Pd(II) mixture. The proposed separation principle was based on the different speciation of Pt(IV) and Pd(II) in 0.01 M HCl medium. The maximum Pd(II) uptake was 313.40 mg/g, while the Pt(IV) uptake was negligible. Therefore, this study may open a new way to design ionic biopolymer based capsule for separation of precious metals.