

Development of high-performance and acidic tolerance of polyethylenimine and polyvinyl chloride composite fiber sorbent for recovery of Pt(IV) from acidic solution

박상원, 김석, John Kwame Bediako, 윤성일, 윤영상†  
전북대학교  
(ysyun@jbnu.ac.kr†)

Platinum group metals (PGMs) such as palladium and platinum have been widely used as catalyst in various industries due to their specific chemical and physical properties. However, after their the usage recovery of PGMs has become a vital issue due to their increased demands and limit availability. In this research, a novel composite fiber sorbent (PEI-PVC) using ionic polyethyleneimine (PEI) and polymer polyvinyl chloride (PVC) was developed for recovery of Pt(IV) from acidic solution. The composition ratio of 2.5:1 for PEI:PVC was showed the best Pt(IV) sorption uptake (350 mg/g). The sorption equilibrium state was rapidly reached as thinner thickness of fiber. In addition, the developed PEI-PVC fiber exhibited excellent acid-tolerance in the 0.1 and 1 M HCl solution. These results suggest that PEI-PVC composite fibers can be manufactured in a facile method, high sorption performance and fast kinetics of composite fiber for precious metals.