

Pd(II) recovery by polyethylenimine–polyvinyl chloride crosslinked fiber from acidic solution

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Platinum group metals (PGMs) become more important with development of high-tech industries. Although PGMs are high-priced imports, they are often used as a catalyst. Thus, recovering palladium is important in terms of economics and resource recycling. Many researchers and industrial people are interested in the recovery of Pd(II) from Pd-containing solutions or wastewaters. In this study, we examined the adsorption performances of polyethylenimine–polyvinyl chloride crosslinked fiber (PEI/PVC–CF) for Pd(II) through isotherm, kinetic, desorption, and recovery experiments. In addition, the analyses of SEM and FTIR were carried out to identify the surface characteristics of our adsorbent. As a result, we found that Pd(II) was removed over 90% in less than 100 mg/L, the maximum Pd(II) uptake was calculated to be 145.65 mg/g by the Langmuir model, 60 min was required to attain the state of equilibrium, and PEI/PVC–CF could be repeatedly reused during at least five times.