

Application of PEI-loaded chitosan hollow beads for the recovery of palladium and platinum from industrial wastewater

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Polyethyleneimine (PEI)-loaded chitosan hollow beads (CHBs) were fabricated and employed to recover palladium and platinum from industrial wastewater. PEI-loaded CHBs were prepared by using pre- and post-loading process and through ionotropic gelation method using sodium tripolyphosphate as counter anion. The prepared beads were further characterized by using SEM and FTIR techniques. The enrichment of amine groups due to PEI on CHBs were confirmed from the FTIR results. The sorption capacity of PEI-loaded CHBs for palladium and platinum was found to be 7.0 and 200.9 mg/g, which was much higher than those of commercial ion exchange resin, TP214 (4.4 and 80.6 mg/g) respectively. From these results it was noted that the ionic polymer loaded hydrogel hollow bead could be used as effective sorbent for the recovery of anionic precious metals.