Polyment enhanced ultrafiltration process for the treatment and recovery of cadmium from aqueous solutions

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ABSTRACT

The objective of this study is to investigate the removal of cadmium by the polyelectrolyte-enhanced ultrafiltration process(PEUF). Two polyelectrolytes (PAA and PEI) were used in this study. The effects of operating conditions including the loading ratio, ionic strength, and pH value on the cadmium rejection were evaluated. Experimental results indicate the rejection ratio of cadmium increases with the pH value. The optimum condition of cadmium rejection is 98.8% using PEI as the polyelectrolyte and at pH 10. On the other hand, at low pH the retention rate decreased significantly with the increase of ionic strength; whereas the rejection rate maintained high value at high pH. Experiments of the recovery of heavy metal were conducted and results indicated the recovery rate decreased with the increase of polymer concentration. The optimum recovery rate of cadmium ions in this process is about 85%.

Keywords : Polymer Enhanced Ultrafiltration、Polyethyleneimine、Rejection、Polyacrylic acid、Recovery、pH

Table of Contents

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