

REACTION KINETICS, CATALYSIS AND... ..

液固半移动床分离废水中铯离子的应用

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摘要 A liquid solid semi-moving bed with non-mechanical particle transport system is proposed and used for fractionation of cesium ion in wastewater. The particle transport system, which consists of a suction chamber, a mixing chamber, a nozzle and a riser tube, is designed to be controlled completely by hydraulic force. Experiments show that continuous feeding and discharging of resin can be realized by the transport system. The removal of ce-sium ion from wastewater is realized. The concentration of cesium ion in effluent liquid remains below $0.1\text{g}\cdot\text{L}^{-1}$ (the initial concentration is $5.3\text{g}\cdot\text{L}^{-1}$) during the 73 hours' experiment. The average exchange capacity of resin dis-charged from the bed is $0.57\text{mmol}\cdot(\text{g dry resin})^{-1}$, which is close to the saturated capacity of $0.65\text{mmol}\cdot\text{g}^{-1}$. And it is also proved that the non-homogeneity of particle vertical velocity along the radial direction can seriously influ-ence the ion-exchange process.

关键词 [semi-moving bed](#) [ion-exchange](#) [wastewater disposal](#) [particle transport](#) [cesium ion](#)

分类号

Application of liquid solid semi-moving bed to fractionation of cesium ion in wastewater

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Abstract

A liquid solid semi-moving bed with non-mechanical particle transport system is proposed and used for fractionation of cesium ion in wastewater. The particle transport system, which consists of a suction chamber, a mixing chamber, a nozzle and a riser tube, is designed to be controlled completely by hydraulic force. Experiments show that continuous feeding and discharging of resin can be realized by the transport system. The removal of ce-sium ion from wastewater is realized. The concentration of cesium ion in effluent liquid remains below $0.1\text{g}\cdot\text{L}^{-1}$ (the initial concentration is $5.3\text{g}\cdot\text{L}^{-1}$) during the 73 hours' experiment. The average exchange capacity of resin dis-charged from the bed is $0.57\text{mmol}\cdot(\text{g dry resin})^{-1}$, which is close to the saturated capacity of $0.65\text{mmol}\cdot\text{g}^{-1}$. And it is also proved that the non-homogeneity of particle vertical velocity along the radial direction can seriously influ-ence the ion-exchange process.

Key words [semi-moving bed](#) [ion-exchange](#) [wastewater disposal](#) [particle transport](#) [cesium ion](#)

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