

Synthesis of Micro-adsorbents for Removal of Cesium in Dynamic Magnetic Field

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In this study, we synthesized a recoverable multifunctional micro-adsorbent using a microfluidic reaction system and evaluated the removal performance of the smart adsorbent toward radioactive cesium as a model sample. Prussian blue-laden magnetic micro-adsorbents with uniform morphology and monodispersity were generated via two-step sequential procedures using a glass capillary microfluidic system, followed by chemical co-precipitation with a high production rate. The cesium removal efficacy of the PB-MNPs-MAs was analyzed based on Langmuir and Freundlich isotherms by controlling adsorption parameters such as adsorbent size, initial cesium concentration, and contact time. We believe that our PB-MNPs-MAs can encapsulate nano-functional adsorbents and prevent actuation, making them promising for environmental remediation and especially for removal of radionuclides.