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Removal of Cr (VI) with a spiral wound chitosan nanofiber membrane module via dead-end filtration

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Abstract

Are-generable spiral wound module of affinitive electrospun chitosan nanofiber membranes was fabricated, and the feasibility of the module for treating Cr (VI) contaminated water was studied. The effect of flow rate, initial Cr (VI) concentration, chitosan nanofiber deposition density, and other metal ions on Cr (VI) adsorption was investigated in detail. It was found that the loading capacity of the module was dependent on flow rate and nanofiber deposition density, but independent on initial Cr (VI) concentration. Lower flow rate led to higher adsorption capacity. The maximum adsorption capacity obtained with 2g/m^2 nanofiber membranes in the module was 20.5 mg/g at 10% breakthrough. The module could also adsorb Cu (II), Cd (II) and Pb (II) ions separately but showed good selectivity to Cr (VI) when these metal ions were

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