

Molecularly ion-imprinted polymer-based electrospun nanofibers as highly effective adsorbent for removal of mercury ions from aqueous solution

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Although the commercial use of mercury (Hg) has been restricted, taking action with the significant amounts of Hg in wastewater must still be considered. A more attractive way to remove mercury ions (Hg^{2+}) from aqueous water is through the preparation of the molecularly ion imprinted polymer (MIIP) composite nanofiber. MIIP was synthesized via sol-gel process by chelating dithizone with Hg^{2+} and cross-linking it with (3-aminopropyl)triethoxysilane as the functional monomer. Resulting powder was mixed in polysulfone (PSf) dope solution and was electrospun. Hg^{2+} was acid-leached to prepare the MIIP immobilized in PSf nanofiber. Results showed that MIIP/PSf has excellent mechanical properties, good stability, high adsorption capacity, and reusable which demonstrate good and practical technique for Hg^{2+} sequestration. This research was supported by the National Research Foundation of Korea (NRF) funded by the Ministry of Science and ICT (No. 2017R1A2B2002109 and No. 2018R1D1A1B07047503) and by the Ministry of Education (No. 2009-0093816).