Magnetic Polymer Nanocomposite for removal of divalent heavy metal ions from water
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Abstract
The magnetic polymer nanocomposite for removal of divalent heavy metal ions from water is magnetic nanocomposite having a core of magnetite (Fe₃O₄) in a shell of branched polyhydroxyethylene (BPE), designated as Fe₃O₄@BPE. The nanocomposite is synthesized by co-precipitation in alkaline solution. Testing showed the nanocomposite reached 93% and 80% Pb(II) and Cd(II) adsorption, respectively, in 30 minutes, attaining equilibrium in 120 minutes. The maximum adsorption capacities of Pb(II) and Cd(II) at 298K were 236.2 and 125 mg/L, respectively. After adsorption, the nanocomposite with the heavy metal(s) absorbed the was easily removed from aqueous solution by application of a magnetic field.