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Adsorption and mobility of Cu (II), Cd (II), Pb (II) ions adsorbed on (hydr)oxide polymer sorbents $M_x O_y \cdot nH_2 O$, M = Zr (IV), Ti (IV), Sn (IV), Mn (IV)

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ABSTRACT

Adsorption of K⁺, Cu (II), Pb (II) and partly Cd (II) ions by (hydr)oxide adsorbents $M_x O_y \cdot nH_2 O_y$, where M – Zr (IV), Sn (IV), Ti (IV), Mn (IV), was studied. The Point of Zero Charges (PZC) of the (hydr)oxides varies from 2.7 (MnO(OH)₂) to 6.9 (Al₂O₃·nH₂O). Surface area is in the range 52–290 m²·g⁻¹. The values of distribution coefficient which can be related to ion exchange are 15–62 for Cu (II) ions and 48–164 for Cd (II) and Pb (II) ions. The diffusion coefficient of adsorbed Cu (II) ions is influenced sufficiently by PZC and surface charge of (hydr)oxide. Presumable surface complexes for (hydr)oxide adsorbents are (2SO⁻)M²⁺ and (SOH^o)...(HOM)⁺.

Keywords: (Hydr)oxide adsorbents; Point zero charge; Cu (II); Cd (II); Pb(II) ions; Selectivity; Diffusion coefficient

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