



## Adsorption and mobility of Cu (II), Cd (II), Pb (II) ions adsorbed on (hydr)oxide polymer sorbents $M_xO_y \cdot nH_2O$ , $M = Zr (IV), Ti (IV), Sn (IV), Mn (IV)$

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### ABSTRACT

Adsorption of  $K^+$ , Cu (II), Pb (II) and partly Cd (II) ions by (hydr)oxide adsorbents  $M_xO_y \cdot nH_2O$ , 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 ( $Al_2O_3 \cdot nH_2O$ ). Surface area is in the range 52–290  $m^2 \cdot g^{-1}$ . 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  $(2SO^-)M^{2+}$  and  $(SOH^0) \dots (HOM)^+$ .

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

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