Study of simultaneous complexation of heavy metals by a mixed heteropolyanion of dawson type

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ABSTRACT

In this work, the simultaneous complexation of the bivalent elements (Ni$^{2+}$, Pb$^{2+}$, Cd$^{2+}$) by a lacunar mixed heteropolyanion of Dawson type ($\alpha_2P_2W_{15}Mo_{2}O_{61}$·$nH_2O$)$^{10-}$ was studied. These elements are in couple (Ni$^{2+}$, Pb$^{2+}$), (Ni$^{2+}$, Cd$^{2+}$), and (Pb$^{2+}$, Cd$^{2+}$) in aqueous solutions. From the characterization of UV visible spectroscopy, the stability of the formed complexes [NiPbP$_2$W$_{15}$Mo$_2$]$^{6-}$, and [CdNiP$_2$W$_{15}$Mo$_2$]$^{6-}$, [CdPbP$_2$W$_{15}$Mo$_2$]$^{6-}$ according to the pH, the time, and the temperature of the reactional medium was studied. The stoechiometry and the constant of stability of these formed complexes were also given. From where it was noted that new mixed compounds having rather high constants of stability were ended, thus they could be steady to the elimination of heavy metals existing in water of industrial wastes.

Keywords: Heteropolyanions; Complexation; Heavy metals; Waters pollution; Spectrophotometric methods

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