

Poly-nuclear complexes of nickel(II) with 2-amino-3-hydroxypropanoic acid in water solutions

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Abstract

Formation of complexes containing nickel(II) salts, as well as ethylenediaminetetraacetic acid (EDTA, Edta⁴⁻) and 2-amino-3-hydroxypropanoic acid (serine, HSer) were studied by absorption spectrophotometry and pH-metry. The mathematical modelling was used to discover the fact that the most expected mathematical models for absorption correlation between pH and reacting components concentration include dissociation constants of ligands (K_i), metal hydrolysis constants (K_{ig}) and stability constants (β) of homoligands, heteroligands and polynuclear complexes of the general composition $[Ni_mSer_nEdta_r]^{2m-n-4r}$ ($m = 1-4$, $n = 0-8$, $r = 0-1$). We calculated the equilibrium constants of reactions and the stability constants of the complexes formed. The limits of pH values of the existence of complexes were found.