Stabilities and coordination modes of α-alaninephosphonic acid in copper(II) heteroligand complexes with ethylenediamine, diethylenetriamine or *N,N,N′,N′,N″*-pentamethyldiethylene triamine in aqueous solution.

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Streszczenie

Solution equilibrium studies on Cu2+–L1–L2 ternary systems have been performed by pH-potentiometry, UV–Vis spectrophotometry and EPR methods (L1 corresponds to polyamines such as ethylenediamine (en), diethylenetriamine (dien), or N,N,N′,N′,N″-pentamethyldiethylenetriamine (Me5dien) and L2 represents 1-aminoethylphosphonic acid (α-alaninephosphonic acid)). The obtained results suggest the formation of heteroligand complexes with [Cu(L1)(α-Ala(P))] stoichiometry in all studied systems. Additionally, in the system with en the [Cu(en)(α-Ala(P))H−1]− species is formed in basic solution. Our spectroscopic results indicate tetragonal geometry for the [Cu(en)(α-Ala(P))] species, geometry slightly deviated from square pyramidal for the [Cu(dien)(α-Ala(P))] complex and strongly deviated from square pyramidal towards trigonal bipyramidal for the [Cu(Me5dien)(α-Ala(P))] species. The coordination modes in these heteroligand complexes are discussed. KeywordsCopper(II) complexes–Heteroligand complexes–Aminophosphonic acids–EPR–Vis spectroscopy–Potentiometry–Equilibria–Stability constants–Polyamines–Five-coordinate complexes

Adres publiczny

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