Potentiometric and spectroscopic study of mixed-ligand copper(II) complexes with *N,N,N',N'',N''*-pentamethyldiethylenetriamine and α- (orβ-) alaninehydroxamic acids in water solution.

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Streszczenie

Stabilities of the mixed-ligand complexes of Cu^{2+} ion with *N,N,N′,N″,N″*-pentamethyldiethylenetriamine [*N,N,N′,N″,N″*-pentamethyl-{bis(2-aminoethyl)amine}, Me_5dien] as a primary ligand and α-alaninehydroxamic acid [2-amino-*N*-hydroxypropanamid, α-Alaha] or β-alaninehydroxamic acid [3-amino-*N*-hydroxypropanamid, β-Alaha] as a secondary ligand L and their absorption and EPR spectra at various pH values are reported. The visible spectra exhibit a characteristic red shift and a shoulder at lower energies indicating a five-coordinate structure of the formed complexes. The change of the EPR spectral parameters as a function of pH reflects two modes of an equatorial–axial chelation by the aminohydroxamic acid ligand L in the $[Cu(Me_5dien)(HL)]^{2+}$ and $[Cu(Me_5dien)(L)]^{+}$ species.

Stabilities of the mixed-ligand complexes with the tridentate amine as a primary ligand and α- or β-alaninehydroxamic acid as a secondary ligand, their absorption and EPR spectra indicating a five coordinating structure of the formed complexes. A decrease of symmetry of the simple complexes generally results in an increase of thermodynamic stability and distortion of the coordination geometry of the mixed-ligand complexes.

Słowa kluczowe

Copper(II) complexes, Mixed-ligand complexes, Five-coordinate complexes, Aminohydroxamic acids, EPR spectra, Vis spectra

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