

Study of thermodynamic and kinetic properties of metal complexes with modified tetraazamacrocyclic ligands

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Polyazamacrocyclic ligands with coordinating pendant arms form stable complexes with wide scale of metal ions. Properties of these complexes predict them to apply in medicine. For any biomedical applications, these metal complexes would exhibit a high thermodynamic stability under physiological conditions because of toxicity of used metal ions, competitive reaction with body-occurred ligands e.g. amino acids, phosphates, peptides and metal ions like Ca(II), Zn(II) and others. However, the thermodynamic stability is not only one request; it is also very important that metal complexes must have a sufficient kinetic inertness to prevent their decomposition in the human body. Therefore, knowledge of their thermodynamic as well as kinetic properties (e.g. dissociation rate constants for an estimation of kinetic inertness) is important to evaluate their use in these applications.

In this work, the formation and acid-assisted dissociation kinetics of Cu(II) and some Ln(III) complexes with macrocyclic ligands of *cyclen* type (*cyclen* – 1,4,7,10-tetraazacyclododecane) having acetate and phosphorus acid pendant arms were studied using molecular absorption spectroscopy, luminescence spectroscopy in steady-state and time-resolved mode.

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