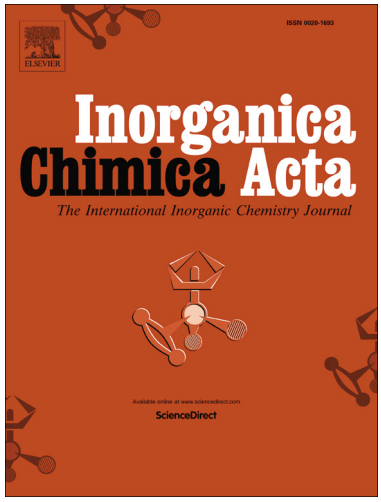

Research paper

Complexation of Dichloro(ethylenediamine)palladium(II) with 1-Hydroxyethylidene-1,1-diphosphonic Acid

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Complexation of Dichloro(ethylenediamine)palladium(II) with 1-Hydroxyethylidene-1,1-diphosphonic Acid

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Highlights

- Interaction of $[Pd(en)Cl_2]$ with 1-hydroxyethylidene-1,1-diphosphonic acid was studied
- Formation constants were calculated for complexes $[Pd(en)Cl_2]$ with diphosphonic acid
- All complexes were characterized by UV-Vis and ^{31}P NMR spectroscopy
- The structure of the binuclear complex was determined by single-crystal X-ray diffraction

Abstract

Formation of the complex between $[Pd(en)Cl_2]$ (en = ethylenediamine) and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP, H_4L) was studied by pH-potentiometry, UV-Vis spectrophotometry and ^{31}P NMR spectroscopy in aqueous solutions containing C_{KCl}= 0.15 mol L^{-1} and 0.004 mol L^{-1}, which corresponds to the concentration of chloride ions in intercellular and intracellular fluids. The formation constants were calculated for $[Pd(en)HL]^-$, $[Pd(en)L]^{2-}$ and $\{[Pd(en)]_2L\}$ complexes. In combination with data reported in the literature, they were used for deriving distribution curves for the corresponding aqua-, hydroxo- and chloro-substituted complexes of the $[Pd(en)]^{2+}$ moiety. The binuclear complex $\{[Pd(en)]_2L\}$ was synthesized and characterized by elemental analysis and NMR spectroscopy. The structure of this complex in which the HEDP bridges two $[Pd(en)]^{2+}$ moieties has been determined by X-ray crystallography.