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Complexation between copper(II) and ethylenediaminetetraacetic acid in aqueous acetonitrile

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Abstract

The complexation between copper(II) and ethylenediaminetetraacetic acid (H4L) in an aqueous solution of acetonitrile (XCH3CN=0.34 molar fractions) is studied by spectrophotometry. The formation of ethylenediaminetetraacetates [CuHL]- and [CuL]2- is established. No [CuH2L] complexes are observed. It is shown that the addition of acetonitrile makes the HL3- and L4- anions dentate higher. The coordination number of the Cu2+ ion in the [CuHL]- complex decreases in the presence of CH3CN and NaClO4 (1.5 mol/1). DMSO (X = 0.36 molar fractions) and DMF (X = 0.33 molar fractions) molecules are outerspherically bound by copper(II) ethylenediaminetetraacetate complexes.