EPR studies on binuclear copper(II) complexes with N,N',N'',N''- tetrakis(2-pyridyl-methyl)-1,4,8,11- tetraazacyclotetradecane in solutions.

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Streszczenie

Binuclear copper(II) complexes of macrocyclic ligand tmpc (tetraazamacrocycle with four pendant 2-piridylmethyl groups attached to the ring nitrogen atoms) with various anions forming bridge between copper ions, or coordinating to copper(II) ions at the apex, were prepared and their frozen solution in DMF and NMF were investigated by Electron Paramagnetic Resonance. The observed Zero Field Splitting was assumed to be of mainly dipolar nature and Cu-Cu distance was estimated from the D parameters. The results indicate that in the NMF solutions all compounds (with possible exception of $[Cu_2(N_3)_2(tmpc)](ClO_4)_2$ assume a boat conformation in that copper ions are separated by about 5 Å, i.e. slightly further than in the solid $[Cu_2F(tmpc)](ClO_4)_3 \cdot 2CH_3CN$. The Cu-Cu separation found for compounds dissolved in DMF varies over the range 4.6-5.5 Å and appears to be correlated with the presence or absence of a bridge in the solid state.