

A new copper(II) di-2-carboxylato bridged dinuclear complex: $[\text{Cu}(\text{oda})\text{phen}]_2 \cdot 6\text{H}_2\text{O}$ (oda = oxydiacetate, phen = phenanthroline)

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The oxydiacetate-bridged copper(II) complex $[\text{Cu}(\text{oda})(1,10\text{-phen})] \cdot 3\text{H}_2\text{O}$ (oda = oxydiacetate dianion, 1,10-phen = 1,10-phenanthroline) has been characterized. The complex is dinuclear and centrosymmetric with each copper atom residing in a CuN_2O_4 octahedral environment. The Cu(II) ions are bridged by two carboxylate-oxygen atoms in a strictly planar Cu_2O_2 core with a Cu-Cu distance of 3.417(2) Å. The magnetic susceptibility measurements (2-300 K) show weak ferromagnetic coupling between the copper ions with $J = 3.3 \text{ cm}^{-1}$. The results are compared with those of the homologous $[\text{Cu}(\text{tda})(1,10\text{-phen})]_2\text{tda}$ (tda = thiodiacetate dianion). A model proposed for the electronic structures of the complexes based on the density functional theory (DFT) satisfactorily accounts for the magnetic results. © 2007 Elsevier B.V. All rights reserved.