Crystal Structure and Magnetic Properties of a Binuclear Copper(II) Complex Bridged by an Alkoxo-oxygen Atom and an Acetate Ion

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$[\text{Cu}_4(\text{L})_2(\text{O}_2\text{CMe})_2]\cdot\text{H}_2\text{O}$ ($\text{L} = 1,3$-bis(5-bromo-2-hydroxybenzylidene)propan-2-ol) was synthesized and its crystal structure determined. ($C_{38}H_{34}N_4O_{10}Br_4Cu_4$ H\textsubscript{2}O, monoclinic, space group $P2_1/c$, $a = 21.072(5)$, $b = 9.673(2)$, $c = 21.934(4)$ Å, $\beta = 109.73(2)^\circ$, $V = 4208(2)$ Å\textsuperscript{3}, $Z = 4$. The crystal structure consists of two independent binuclear copper(II) complexes and the non-coordinating water molecule in the asymmetric unit. The Cu(II) ions are in a square-planar geometry and coordinated by donor atoms of the ligand (NO$_3$).

The average Cu···Cu distance and average Cu-O-Cu angle are 3.491(2) Å and 132.0(1)$^\circ$, respectively. Temperature-dependent magnetic susceptibility measurements of the complex show an intramolecular antiferromagnetic coupling in the dimeric Cu(II) core. The fitting parameters are $-2J = 174.4$ cm$^{-1}$, $g = 1.98$. 