A dinuclear Cu(II) complex, \([\text{Cu}_2(\text{L}^2)_2]\) (H\(_2\text{L}^2\) = 4-methoxysalicylaldehyde \(O-(2\text{-hydroxyethyl})\)-oxime), has been synthesized through the complexation of Cu(II) acetate monohydrate with the ligand H\(_2\text{L}^1\) (H\(_2\text{L}^1\) = 5,5\('\)-dimethoxy-2,2\('\)-[(ethylene)dioxybis(nitrilomethylidyne)]diphenol), and characterized by elemental analyses, IR, UV/Vis and emission spectra. The crystal structure of the Cu(II) complex has been determined by single-crystal X-ray diffraction. The catalysis by Cu(II) ions results in the unexpected cleavage of the N–O bonds in the ligand H\(_2\text{L}^1\), giving a novel dialkoxo-bridged dinuclear Cu(II) complex possessing a Cu-O-Cu-O four-membered ring core instead of the expected salen-type bisoxime Cu-N\(_2\)O\(_2\) complex.

Key words: Bisoxime Ligand, Cu(II) Complex, Synthesis, Crystal Structure