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Synthesis and Characterization of Tetraoxime Ligand, Bis-[(2E,3E,2´E)-3,3´-(1,2-Phenylene-Dinitrilo)dibutan-2-One Dioxime] and Its Dinuclear and Tetranuclear Copper(II)/Nickel(II) Complexes

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Abstract: A new tetraoxime, (H_4L), was prepared in EtOH by reacting biphenyl-3,3´,4,4´-tetramine with butane-2,3-dione oxime. The tetraoxime ligand was characterized by elemental analyses, H-NMR and ^{13}C-NMR, IR, and mass spectral studies. Dinuclear copper(II), nickel(II) and tetranuclear copper(II) complexes of tetraoxime ligand were prepared and characterized by elemental analyses, magnetic moments, IR, and mass spectral studies. In the dinuclear metal complexes, metal:ligand ratio was found as 2:1. Elemental analyses and stoichiometric and spectroscopic data of the metal complexes indicated that the metal ions were coordinated to the nitrogen atoms of oxime groups (C=N). In addition, total energy and heat formation for ligand and dinuclear Cu(II)/Ni(II) complexes by semiempirical PM3 calculations show that square-planar geometry is more stable than other geometries.

Key Words: Tetraoxime dinuclear, tetranuclear, copper and nickel complexes

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