A Manganese(II) 4-Hydroxycinnamate Complex with the Tripod Ligand Tris(2-benzimidazolylmethyl)amine

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A six-coordinate manganese (II) complex with the tripod ligand tris(2-benzimidazolylmethyl)amine (ntb), with composition [Mn(ntb) (4-hydroxycinnamate)](4-hydroxycinnamate) · $(DMF)_{0.5} \cdot (H_2O)_3$, was synthesized and characterized by elemental and thermal analyses, electrical conductivity, IR, and UV/vis spectral measurements. The crystal structure of the complex has been determined by the single-crystal X-ray diffraction. The Mn (II) cation is bonded to an ntb ligand and a 4-hydroxycinnamate ligand through four N atoms and two O atoms, giving a distorted octahedral coordination geometry. Cyclic voltammograms of the complex indicate a quasi-reversible Mn^{3+}/Mn^{2+} couple. The X-band EPR spectrum of the complex exhibits a six-line manganese hyperfine splitting pattern with $g = 2$, $A = 95$, and confirms that the material is high-spin Mn(II).

Key words: Crystal Structure, Cylic Voltammetry, EPR, Manganese(II) Complex, Tris(2-benzimidazylmethyl)amine