A Seven-coordinate Manganese(II) Complex Formed with the Tripodal Tetradentate Ligand Tris(*N*-methylbenzimidazol-2-ylmethyl)amine

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A seven-coordinate manganese(II) complex with the tripodal tetradentate ligand tris(*N*-methylbenzimidazol-2-ylmethyl)amine (Mentb), with composition [Mn(Mentb)(α-methacrylate)(DMF)]-(ClO_4) · (DMF), was synthesized and characterized by elemental analysis, electrical conductivity, and IR and UV/Vis spectral measurements. The crystal structure of the complex has been determined by single-crystal X-ray diffraction. The Mn^{II} cation is bonded to a Mentb ligand, an α-methacrylate ligand and a DMF molecule through four N atoms and three O atoms, resulting in a seven-coordinate geometry. Cyclovoltammograms of the complex indicate a quasireversible Mn^{3+}/Mn^{2+} couple. The X-band EPR spectrum of the complex exhibits a six-line manganese hyperfine pattern with $g = 2$, $A = 91$, and confirms that the material is high-spin Mn(II).

Key words: Manganese(II) Complex, Crystal Structure, Cylovoltammetry, EPR, Tris(*N*-methylbenzimidazol-2-ylmethyl)amine