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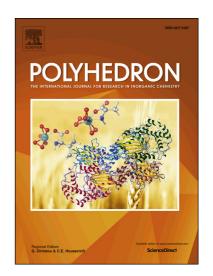
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 $Mn_2(CO)_6(\mu\text{-mbi})_2$ as a precursor for mono- and polynuclear complexes containing the 2-mercaptobenzimidazolate (mbi) ligand

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Abstract

The Me₃NO initiated reaction between Mn₂(CO)₁₀ and 2-mercaptobenzimidazole (mbiH) at room temperature leads to the formation of dinuclear $Mn_2(CO)_6(\mu-\kappa^2-mbi)_2$ (1) in which the metal atoms are linked by the sulfur atoms of the heterocyclic ligand. Complex 1 reacts with triphenylphosphine (PPh₃), bis(diphenylphosphino)methane (dppm) and 1,2bis(diphenylphosphino)ethane (dppe) at room temperature afford to mononuclear $Mn(CO)_3(PPh_3)(\kappa^2-mbi)$ (2), $Mn(CO)_3(\kappa^2-dppm)(\kappa^1-mbi)$ (3) and $Mn(CO)_3(\kappa^2-dppe)(\kappa^1-mbi)$ (4), respectively, via metal-sulfur bond scission. Upon gentle heating, 1 also reacts with $Os_3(CO)_{10}(NCMe)_2$ and $Ru_3(CO)_{12}$ to yield the mixed-metal clusters $MnOs_3(CO)_{13}(\mu_3-\kappa^2-mbi)$ (5) and MnRu₃(CO)₁₃(μ_3 - κ^2 -mbi) (6), respectively, which contain a Mn(CO)₃(mbi) fragment. All these new complexes have been characterized by analytical and spectroscopic data, together with single crystal X-ray diffraction for 1, 3, 4 and 5.

Keywords: Manganese complexes; Carbonyls; 2-Mercaptobenzimidazole; Mixed-metal clusters; X-ray structures.

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