Synthesis, Characterisation and Structural Studies of $[Zn(phen)_3][Fe(CN)_5(NO)]\cdot 2H_2O\cdot 0.25MeOH$ and $[(bipy)_2(H_2O)Zn(\mu\text{-}NC)Fe(CN)_4(NO)]\cdot 0.5H_2O$

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Two new bimetallic complexes $[Zn(phen)_3][Fe(CN)_5(NO)] \cdot 2\ H_2O \cdot 0.25$ MeOH, (**1**) and $[(bipy)_2(H_2O)Zn(\mu\text{-}NC)Fe(CN)_4(NO)] \cdot 0.5\ H_2O$, (**2**), have been isolated (where phen = 1,10-phenanthroline and bipy = bipyridyl) and characterised by X-ray crystallography [as the $2\ H_2O \cdot 0.25\ CH_3OH$ solvate for (**1**) and hemihydrate for (**2**)] infrared spectroscopy and thermogravimetric analysis. Substitution of phenanthroline for bipyridyl resulted in a cyano-bridged bimetallic species rather than two discrete mononuclear metal complexes. The bond angles of Fe-N-O were shown to be practically linear for both **1** [179.2(7)°] and **2** [178.3(3)°], and the Zn atoms have distorted octahedral geometry. The solvent molecules in both crystal lattices take part in forming hydrogen-bonded networks.

Key words: Zinc(II) Nitrate, Crystal Structures, Spectral Studies