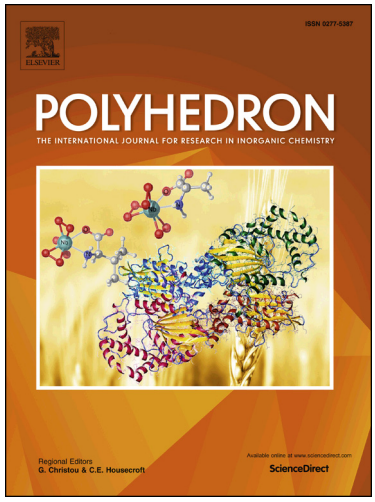

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Intriguing binding modes of tetradentate pyridoxal derivatives to molybdenum centre

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ABSTRACT

The Schiff base *pdxen* ligands (H_2py_2en = *N*,*N*'-ethylenebis(pyridoxylideneimine and H_2py_2pren = *N*,*N*'-prophylenebis(pyridoxylideneimine)) were found to form readily by the mechanochemical synthesis from their corresponding diamine and pyridoxal. Reduction of the Schiff bases with $NaBH_4$ yielded reduced *pdxan* ligands (H_2Rpy_2en = *N*,*N*'-ethylenebis(pyridoxylamine) and H_2Rpy_2pren = *N*,*N*'-prophylenebis(pyridoxylamine)). A dinuclear molybdenum(VI) complex with the bridging *pdxen* ligand $[\{MoO_2\}_2(\mu\text{-}py_2en)(OMe)_2(MeOH)_2]\cdot 3MeOH$ (**1·3MeOH**), and mononuclear complexes with the *pdxen* ligand $[MoO_2(py_2pren)]$ (**3**), as well as with the *pdxan* ligands: $[MoO_2(Rpy_2en)]$ (**2**) and $[MoO_2(Rpy_2pren)]$ (**4**) were prepared and characterized. Significant differences in the coordination of the Schiff base ligands were found as a consequence of chain length and ligand flexibility. Complexes **1**−**4** were obtained either by the reaction of $[MoO_2(acac)_2]$ or $[Mo(CO)_6]$ with the corresponding ligands. Crystal and molecular structures of complexes **1·3MeOH**, **2** and **3** were determined by the single crystal X-ray diffraction method. All complexes were characterized by microanalysis, FT-IR, NMR, UV, thermogravimetric analysis and powder X-ray diffraction method.

Keywords: pyridoxal; molybdenum(VI) complexes; tetradentate ligand; Schiff base; bridging ligand; coordination modes