Our interest in the structures of dinuclear and polynuclear molybdenum complexes stabilised by thiolate bridges arises from their importance as models for metal-sulphur sites in biological systems. Besides this, such compounds have found applications as synths for the production of heterogeneous clusters. Our previous studies of the products of reactions of mono- and binuclear molybdenum organometallics with dimethyl disulphide have involved characterisation of new dinuclear and trinuclear molybdenum species, such as \([\text{CpMo}^\text{III}(\text{CO})\text{Me}_2]_{\text{2}}\)(m-SMe) or [\text{CpMo}^\text{II}(\text{m-SMe})\text{Mo}^\text{II}(\text{CO})\text{Me}_2]\) (see Scholhammer et al., 1995). A complication in this work has been the frequent occurrence of disorder in the bridging groups of complexes based on a \(\text{CpMo}^\text{III}(\text{m-SMe})\text{Mo}^\text{II}\) core. Examples of this will be presented. In addition, the structures of a number of compounds currently under investigation in this laboratory in which bridging nitrogen atoms are thought to stabilise the \(\text{CpMo}^\text{III}(\text{m-SMe})_2\text{Mo}^\text{II}\text{Cp}\) unit will be described.


PS07.02.08 LINEAR OLIGONUCLEAR METAL-METAL MULTIPLE BONDS. Shie-Ming Peng*, Shen-Jye Shieh, Cheng-Chen Lin, Jint-Tsair Sheu, Chin-Cheng Chou, Gene-Hsiang Lee Department of Chemistry National Taiwan University Taipei Taiwan, R.O.C.

The nature of metal-metal bonding in dinuclear metal complexes is well understood. The extension of dinuclear metal complexes to oligonuclear metal-chain complexes is rare.

The bis(2-pyridyl)amidio ligand (dpa) in the syn-syn conformation allows each nitrogen atom to coordinate to a separate metal ion forming metal-metal multiple bonds, e.g. the triruthenium(II) complex, \([\text{Ru}_3(dpa)_2\text{Cl}_2]\), exhibits a three-centred triple bond among the three ruthenium ions (Ru-Ru, 2.2537(5)Å). The structure and magnetic interaction of quadruply bridged trinuclear metal complexes \([\text{M}_3(x_1y_3z)_3]([\text{Me}(dpa)_2\text{Cl}_2])\) are discussed. The work of further extension to tpda and ipda ligands will be presented.

PS07.02.09 CHLOROMERCURATES OF TWO AMINECARBOXYLATE COBALT(III) COMPLEXES. Kerry D. Robinson and Izya F. Burshtein, Siemens Energy and Automation, Inc., 6300 Enterprise Ln., Madison, WI 53719-1173, USA; Anatolii L. Pozynik, Institute of Molecular and Atomic Physics, 220072, Minsk, Belarus

For the first time, compounds of two cobalt(III) complexes, \(\text{Cl}^+\) and \(\text{Cl}^-\) are synthesized \([\text{Cl}^+\text{Co(en)}\text{L}^1\text{Cl}^+\text{Cl}^-\text{Co(dien)L}^2\text{Cl}^-\text{Cl}^-\text{L}^1\text{Cl}^-\text{N},\text{N-bis(2-aminoethyl) amino-}3\text{-propionate or S-ornithinate ions respectively. L}^1\text{anions were prepared by the Hofmann destruction of corresponding amide, N,N-bis(2-carbamoyl)ethylnimo-3-propionate, prepared in its turn, from β-alanine and acrylamide.}

The crystal and molecular structures of the \(\text{C}_2\) perchlorate, \([\text{C}_2]\text{(ClO}_4)_2\), \(1/2\text{H}_2\text{O}\), and chloromercurates of both cations characterized by general formulae \([\text{Cl}^+\text{HgCl}_3]\) and \([\text{Cl}^-\text{HgCl}_3]\) are determined by x-ray analysis. Chloromercurates of both types are deposited simultaneously from solutions of the corresponding perchlorates or chloride after addition of mercuric chloride in excess.

Both cations are low-spin octahedral cobalt(III) complexes of the \([\text{Co}^\text{II}(\text{N})\text{Cl}_3]\) type of the \(\text{Cl}^-\) cations, three \(\text{N}\) atoms of the \(\text{L}^1\) ligand are arranged in each, whereas, in the \(\text{Cl}^+\) cations middle \(\text{N}\) atom of the dien ligand lies in \(\text{trans}\) position to \(\text{N}\) atom of the ornithinate side chain.

The crystals of \([\text{Cl}^+\text{HgCl}_3]\) compounds contain discrete tetrahedral tetracloromercururate(II) anions. Anionic parts of \([\text{Cl}^-\text{HgCl}_3]\) crystals are built of a variety of species. In some of them, there is interaction of Hg atoms with carbonylate O atoms of the complex cations. Three Hg-containing species are found in \([\text{Cl}^-\text{HgCl}_3]\) crystals: a) \(\text{HgCl}_3\) anions coupled to O atom (tetrahedral \(\text{HgCl}_3\) species); b) \(\text{Cl}_2\text{Hg}(\mu-\text{Cl})\text{HgCl}_3\) dimers; c) centrosymmetric \(\text{Cl}_2\text{Hg}(\mu-\text{Cl})\text{HgCl}_3\) dimers. The \([\text{Cl}^-\text{HgCl}_3]\) crystals contain two crystallographically inequivalent \(\text{HgCl}_3\) and \(\text{HgCl}_3\) ions as well as \(\text{Cl}_2\text{Hg}(\mu-\text{Cl})\text{HgCl}_3\) dimers.