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THERMAL DECOMPOSITION OF SEVERAL RELATED $M_nFe(CN)_5L.xH_2O$ COMPLEXES

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Several solid complexes of the type $M_n Fe(CN)_5L.xH_2O$ (where M is a divalent transition metal cation and L is a pyridinic derivative, that may or may not have a second complexing function such as a carboxylate group) have been prepared and characterized. The thermal decomposition of these solids proceed in various stages: (a) dehydration, usually in more than one step, to yield essentially the anhydrous salt without noticeable decomposition (in the temperature range 60 – 200 °C); (b) ligand loss, in the case of ligands L that are neutral molecules (pyridine, nicotineamide and isonicotineamide), or ligand loss with decomposition, in the case of negatively charged ligands (nicotinate, isonicotinate), followed by (c) decomposition to yield solid alloy (under nitrogen atmosphere). These two last stages overlap in some of the complexes, spanning a very broad temperature rante. In the more favourable cases, both dehydration and ligand loss can be analyzed kinetically from the DTA-TGA curves; activation energies and possible mechanisms are discussed. In every case, IR spectroscopy and X-ray diffraction methods were used to identify the phases formed.

The results are compared with previous findings on the sodium salts.

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