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Three structural modifications in the series of layered solids $T(H_2O)_2[Ni(CN)_4]\cdot xH_2O$ with T = Mn, Co, Ni: Their nature and crystal structures

J. Rodríguez-Hernández [a,b], A.A. Lemus-Santana [a], C.N. Vargas [a], E. Reguera [a,*,1]

[a] Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada del IPN, Unidad Legaria, México, DF, Mexico
[b] Instituto de Ciencia y Tecnología de Materiales, Universidad de La Habana, La Habana, Cuba

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ABSTRACT

In the studied series of layered solids, the available coordination sites at T metal centers are occupied by water molecules which serve to stabilize additional water molecules in the interlayer region through hydrogen bonding interactions. The stability of these 2D solids results from these interactions between coordinated and weakly bonded water molecules. In this contribution, the crystal structures and related properties of the titled compounds are reported. Three different structural modifications for a given T metal were found. The refined crystal structures were supported by the recorded infrared, Raman, and UV–vis spectra and thermogravimetric data. Two of these modifications were found to be room and high temperature thermodynamic products and the remaining one a room temperature kinetic product.