Mössbauer Spectroscopic Studies of Molecule-Based Magnets: Two-Dimensional Complexes Derived from Metal Schiff-Bases and Hexacyanoferrate(III)

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Z. Naturforsch. **57 a,** 603–606 (2002); received January 18, 2002

Presented at the XVIth International Symposium on Nuclear Quadrupole Interactions, Hiroshima, Japan, September 9-14, 2001.

Variable-temperature ^{57}Fe Mössbauer measurements on cyanide-bridged 2-D bimetallic assemblies $NEt_4[Mn(salen)]_2[Fe(CN)_6]$ (**1**), $K[Mn(3\text{-}MeOsalen)]_2[Fe(CN)_6]$ (**2**) and $K[Mn(3\text{-}MeOsalen)]_2[Fe(CN)_6] \cdot 2$ DMF (**3**), where $salen^{2-}$ = *N*,*N*′-ethylenebis(salicylidene iminato) dianion, revealed that these compounds exhibit a long range magnetic ordering below ca. 10 K under zero applied field. The quadrupole splittings of **1** - **3** showed intermediate values between those of typical cyano-bridged 1-D and 3-D complexes. The paramagnetic state of $K[Mn(5\text{-}Clsalen)][Fe(CN)_6] \cdot 4\ H_2O$ (**4**) turned to a bulk magnetic one with desolvation.

Key words: ^{57}Fe Mössbauer Spectroscopy; Schiff Bases; Hexacyanoferrate(III); Magnetic Ordering; Solvatomagnetism.