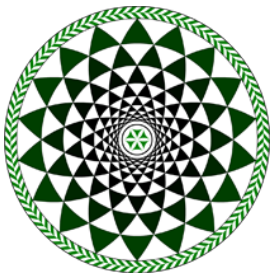

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Tuning of magnetic ordering temperatures of Mn2Nb 3D chiral molecular magnet by pressure and guest molecules

Tuesday, July 7, 2015 8:30 PM (1h 30m)

Over the recent years an intensive research provided examples of synthesis of heterometalic molecular materials with paramagnetic [M(CN)₈]^{n−} (M = Nb^{IV}, Mo^{IV,V}, W^{IV,V}) ions, 3d metal ions and organic ligands. Such assemblies [1,2] proves the great potential for applications of cyano-bridged coordination networks and in the future this could lead to obtaining room temperature octacyanometalate-based magnets tunable by light, temperature, pressure or/and solvent[1,2]. Additionally with development of organic chemistry it is possible, by incorporating enantiopure ligands, to obtain chiral coordination networks. Co-existence of both magnetic and optical properties could give us a chance to examine thoroughly physical phenomena like magneto-chiral dichroism and magnetically induced second harmonic generation. Furthermore magnetic properties can be tuned by pressure-induced structural changes that cause the alteration of magnetic interaction between metal centres[1] leading to novel molecular switches.

Here we present 3D networks of [Mn^{II}(S/R/rac-1,2-diaminopropane)₂]₂[Nb^{IV}(C
and its dependence of the magnetic ordering temperature on pressure and uptake/removal of guest molecules. The collected information allows to discuss the influence of the coordination skeleton on physical properties of the compound.

References:

[1] Fitta M., Bałanda M., Pełka R., Konieczny P., Pinkowicz D., Sieklucka B., Journal of Physics Condensed Matter, 2013, 25 ,49

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