A Family of Cyanide-Bridged Molecular Squares: Structural and Magnetic Properties of $[\{M^{II}Cl_2\}_2\{Co^{II}(triphos)(CN)_2\}_2]\cdot xCH_2Cl_2$, M = Mn, Fe, Co, Ni, Zn

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Single molecule magnets (SMMs), assembled from building blocks of simple paramagnetic metal-containing units have great potential for application in magnetic storage media and electronic devices. The key feature is a well-defined geometric relationship among the building blocks. This has been achieved in the synthesis of a novel family of "molecular squares" presented here.

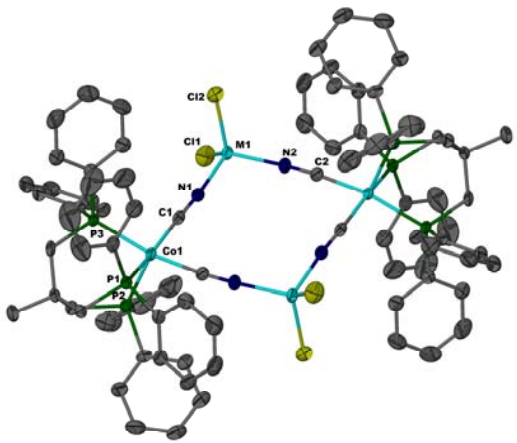

*Figure 1. Structure of **[CoM]** squares.*

Of all the "molecular squares", the one based on Co^{II} and Mn^{II} shows the most promise and best properties of being a SMM (see the brown trace in Fig. 2).

Magnetic properties of the "molecular squares" were also investigated using magnetic resonance at the NHMFL EMR and DC Field Facilities.

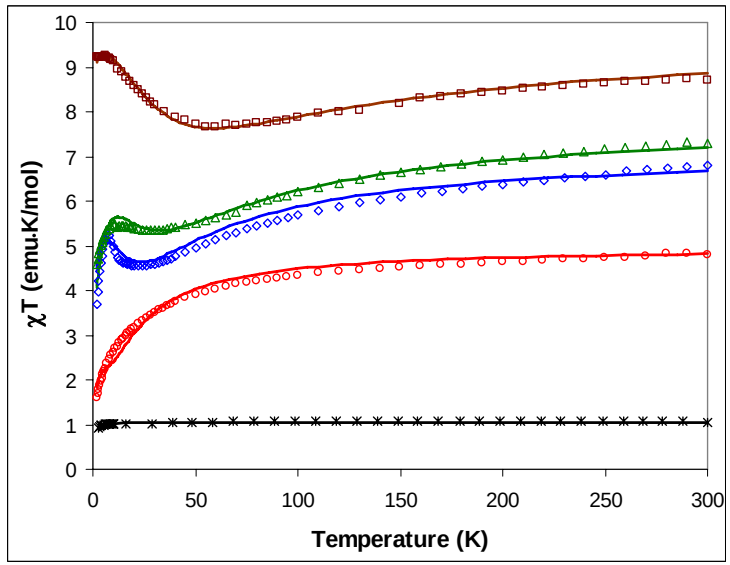

*Figure 2. Magnetic properties of molecular squares: Temperature dependence of the χT product for compounds **[CoMn]** (□), **[CoFe]** (Δ), **[CoCo]** (◊), **[CoNi]** (o), **[CoZn]** (*).*

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