

## **CYANO-BRIDGED COORDINATION POLYMERS INCORPORATING LINEAR TRICOBALT CHAIN**

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Linear trinuclear  $\text{Co}^{\text{II}}_3(\text{dpa})_4\text{X}_2$  complexes (dpa = dipyridylamine; X = anion) exhibit interesting electronic and magnetic properties, including a gradual spin transition usually observed above 150 K.<sup>1</sup> Interestingly, not much attention has been paid to the use of the  $[\text{Co}_3(\text{dpa})_4]^{2+}$  fragment as a ditopic linker. Inspired by fascinating chemistry and magnetism of Prussian blue type materials,<sup>2</sup> we set out to prepare their extended analogues by substituting  $[\text{Co}_3(\text{dpa})_4]^{2+}$  fragments for cyanide linkers. We expect that this approach can lead to materials that combine the spin-crossover behavior of the  $[\text{Co}_3(\text{dpa})_4]^{2+}$  unit with some of the properties observed in Prussian blue type solids, including charge-transfer induced spin transitions, multistep spin crossover, magnetic pole reversal, etc. Our initial findings from this research, such as the preparation of a pentanuclear complex with a linear  $\{\text{Fe}-\text{C}\equiv\text{N}-\text{Co}-\text{Co}-\text{Co}-\text{N}\equiv\text{C}-\text{Fe}\}$  core, will be reported, and future possibilities and experiments will be discussed.

### *References*

1. Clérac R, Cotton FA, Daniels LM, Dunbar KR, Kirschbaum K, Murillo CA, Pinkerton AA, Schultz AJ, Wang X, *J. Am. Chem. Soc.* 2000, 122, 6226.
2. Dunbar KR and Heintz RA, *Prog. Inorg. Chem.* 1997, 45, 282