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Controlling Magnetism by Light in Nanoscaled Heterostructures of Cyanometallate Coordination Networks: the role of increased complexity[1]

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Nanometer-sized heterostructures of the Prussian blue analogues $A_jCo_k[Fe(CN)_6]_\ell \cdot nH_2O$ (Co-Fe PBA, with A = K, Rb) and $Rb_aNi_b[Cr(CN)_6]_c \cdot mH_2O$ (Ni-Cr PBA) have been investigated, and new phenomena, not observed for the constituent bulk phases, have been observed.[2,3,4,5] A crucial aspect of the ability to photocontrol the persistent magnetism up to 70 K is the role of the strain coupling present at the interfaces between the nanoscaled regions of the constituents. Increasing the morphological complexity of the samples has the potential to provide materials possessing novel combinations of properties. In parallel, the interplay between long-range magnetic order and structural coherence is an important consideration in our attempts to design new systems. Open, unresolved issues will be discussed, and potential future paths will be sketched.

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