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## Optical activity and switchable luminescence in octacyanido-based bimetallic layered magnets

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Molecule-based magnets constructed of octacyanidometallates and complexes of 3d/4f metal ions are now attracting a considerable attention as they reveal the wide range of magnetic phenomena including ferromagnetism, metamagnetism, charge transfer or spin transitions, and slow relaxation of magnetization.<sup>[1]</sup> The implementation of other physical functionalities, including chirality, luminescence, ionic conductivity, microporosity, or photoinduced phase transitions into magnetic octacyanido-based material results in extraordinary cross-effects, such as a magnetization-induced second harmonic generation, or photoswitchable second harmonic light, occurring when chirality is combined with photoinduced magnetic ordering.<sup>[2,3]</sup> In this context, we focus on searching for new synthetic pathways towards  $[M(\text{CN})_8]$ -bridged magnets with additional optical functionalities, which were found to be the most promising in the interactions with magnetic phenomena.<sup>[3]</sup> Here, we present two novel types of two-dimensional bimetallic cyanido-bridged networks combining magnetic ordering with embedded optical functionalities: (a) chiral  $\{[\text{Mn}^{\text{II}}(\text{R-mpm})_2]_2[\text{Nb}^{\text{IV}}(\text{CN})_8]\} \cdot 4\text{H}_2\text{O}$  and  $\{[\text{Mn}^{\text{II}}(\text{S-mpm})_2]_2[\text{Nb}^{\text{IV}}(\text{CN})_8]\} \cdot 4\text{H}_2\text{O}$  (mpm =  $\alpha$ -methyl-2-pyridine-methanol) ferrimagnets with  $T_{\text{c}} = 23.5$  K revealing natural optical activity due to the chiral crystal structure, and magnetic optical activity in the presence of external magnetic field, with the strong enhancement in the magnetically ordered phase,<sup>[4]</sup> and (b)  $\{[\text{Tb}^{\text{III}}(\text{Box})_2(\text{dmf})_2][\text{W}^{\text{V}}(\text{CN})_8]\} \cdot \text{H}_2\text{O}$  (Box = bis(oxazoline)) ferrimagnets with  $T_{\text{c}} = 2.4$  K exhibiting visible green to red luminescence switchable by excitation light.<sup>[5]</sup>

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**Primary author:** Dr CHORAŻY, Szymon (Department of Chemistry, The University of Tokyo)

**Co-authors:** Prof. SIEKLUCKA, Barbara (Faculty of Chemistry, Jagiellonian University, Kraków); Dr GÖRLICH, Edward (Institute of Physics, Jagiellonian University, Kraków); Dr NAKABAYASHI, Koji (Department of Chemistry, The University of Tokyo); Dr RAMS, Michał (Institute of Physics, Jagiellonian University, Kraków); Dr PODGAJNY, Robert (Faculty of Chemistry, Jagiellonian University, Kraków); Prof. OHKOSHI, Shin-ichi (Department of Chemistry, The University of Tokyo); Dr NITEK, Wojciech (Faculty of Chemistry, Jagiellonian University, Kraków)

**Presenter:** Dr CHORAŻY, Szymon (Department of Chemistry, The University of Tokyo)

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