Octacyanidotungstate-based Thermofluorochromic Magnets

([1]*Department of Chemistry, School of Science, The University of Tokyo*) ○ Olaf Stefanczyk,[1] Kunal Kumar,[1] Shin-ichi Ohkoshi,[1]

Keywords: Molecular Magnetism; Fluorescence; Thermochromism; Solvatochromism; Functional Materials

The design of multifunctional materials combining several diverse physicochemical phenomena is one of the greatest goals in chemistry. Presently, we witnessed the galloping progress in the development of functional molecular magnet exhibiting non-trivial magnetic properties, *e.g.*, a long-range magnetic ordering with high critical temperatures for three-dimensional cyanide-bridged networks[1] or a slow magnetic relaxation for lanthanide(III) single ion magnets,[2] and evolution of optical properties (*e.g.*, fluorescence, absorbance) tuned by external physical (*e.g.*, temperature, pressure) or chemical stimuli (*e.g.*, solvent and gas molecules).[3] These assemblies can be applied for the construction of new detectors, as well as model systems to broaden our knowledge about magnetostructural correlations and cross-effects in such materials.

In this presentation, we will introduce a comprehensive studies for octacyanidotungstate salts combining the alternation of long-range antiferromagnetic ordering temperatures, and diverse chromic effects: hygrochromism (the change of color in different relative humidity atmospheres), thermochromism (the alteration of color at diverse temperatures), and thermofluorochromism (the simultaneous modification of luminescence and color at varied temperatures).

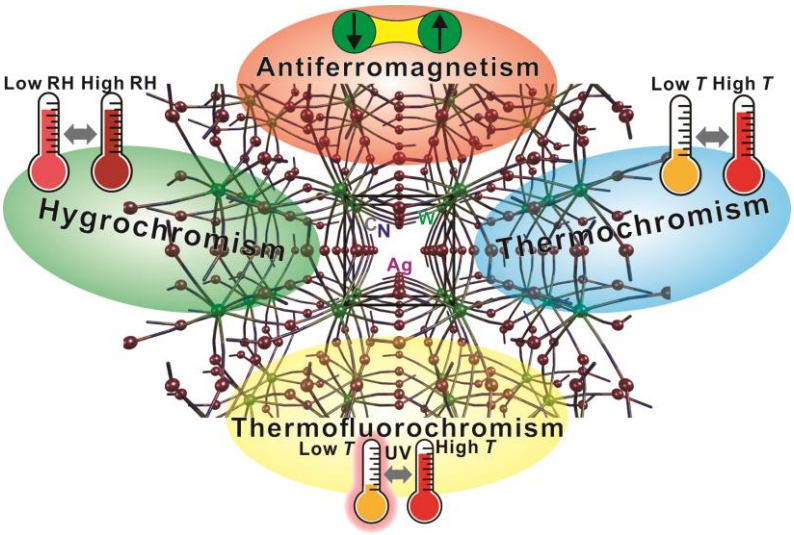

Figure 1. Functionalities present in $M^{I}_{3}[W^{V}(CN)_{8}]\cdot nH_{2}O$ salts.

1) O. Stefańczyk, S. Ohkoshi, *Chem. Eur. J.* **2019**, *25*, 15963. 2) Y. Xin, J. Wang, M. Zychowicz, J. Zakrzewski, K. Nakabayashi, B. Sieklucka, S. Chorazy, S. Ohkoshi, *J. Am. Chem. Soc.* **2019**, *141*, 18211. 3) M. Reczyński, K. Nakabayashi, S. Ohkoshi, *Eur. J. Inorg. Chem.* **2020**, 2669.