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Novel functional materials based on cyanido-bridged metal assemblies and metal oxides

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Investigation of functional solid materials is an important topic in the field of chemistry and materials science. Our laboratory has paid attention to cyanido-bridged metal assemblies and nano-sized metal oxide systems. Cyanido-bridged assemblies are suitable systems to control electronic and magnetic state by external stimuli and observed humidity sensitive magnetism, interference effect between magnetic ordering and ionic conductivity, photo-induced magnetization due to charge transfer induced spin transition and spin-crossover phenomenon, and nonlinear magneto-optical effect, chiral photo-switching magnet exhibiting orthogonal switching of polarization of second harmonic light by photo-irradation, etc. Furthermore, by utilizing nano-scale chemical synthesis, we have realized huge coercive field, electromagnetic wave absorption, room temperature photo-induced phase transition, and thermal energy storage in nano-sized metal oxides from abundant elements such as iron or titanium. In this presentation, I will introduce syntheses, functionalities, and mechanisms of some of these functional cyanido-bridged metal assemblies and metal oxide nano materials based on rational design and strategies.

Biography

Shin-ichi Ohkoshi is a Professor of Chemistry at The University of Tokyo. He received his PhD from Tohoku University in 1995, and then joined KAST. In 1997, he moved to The University of Tokyo as a Research Associate, and became a Lecturer in 2000. In 2003, he was promoted to an Associate Professor, and since 2006, he has been a Full Professor in the Department of Chemistry at The University of Tokyo. He has received CSJ Award for Young Chemists in 2000, The Young Scientists' Prize in 2005 by MEXT of Japan, JSPS Prize in 2008, Japan Academy Medal in 2008, IBM Japan Science Prize in 2009, Ichimura Academic Award in 2014, and Inoue Prize for Science in 2015. He served as an invited Professor at the University of Bordeaux I, France in 2007, the University of Pierre and Marie Curie, France in 2008, and has been an Honorary Professor of Durham University, UK since 2009, and an Invited Professor at Palacky University, Czech Republic since 2010.

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