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3D water-stable magnesium metal-organic framework for sensoring Fe³⁺ion

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Excessive Fe³⁺ ions in water will cause great harm to the human body, even if it is required. Therefore, the design of new fluorescence probes for Fe³⁺ ion is very important. Herein, Mg(HPCD) (H₂O) (H3PCD=9-(2-(ethoxy(hydroxy)phosphoryl) ethyl)-9H carbazole-3,6-dicarboxylic acid) was synthesized and characterized. Adjacent {MgO₆} octahedral are joined by O-P-O and O-C-O groups into 1D chain, which are linked by the HPCD2- ligands to form a 2D layer parallel then packed to form a 3D network (Fig.1). The Fe³⁺ ion can reduce fluorescence relative to other metal ions (Cd²⁺, Co²⁺, Cu²⁺, Sr²⁺, Al³⁺, Zn²⁺, Mn²⁺, Pb²⁺ and Fe²⁺) (Fig.2), so the compound may be used as a fluorescence probe for Fe³⁺ ion.





Figure 2: Fluorescence intensities of Mg(HPCD)(H2O) immersed in the individual aqueous solutions.

Figure 1: Structure of Mg(HPCD)(H2O) viewed along the b-axis.

Biography

Rong-Xin Yuan has completed his PhD in 2002 at Nanjing University. During 2002-2004, he worked at University of Bielefeld and University of Nottingham as a Post-doctoral Fellow. Now, he is the Director of Key Lab of Advanced Functional Materials. He has published more than 80 papers in reputed journals.

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