KN-26

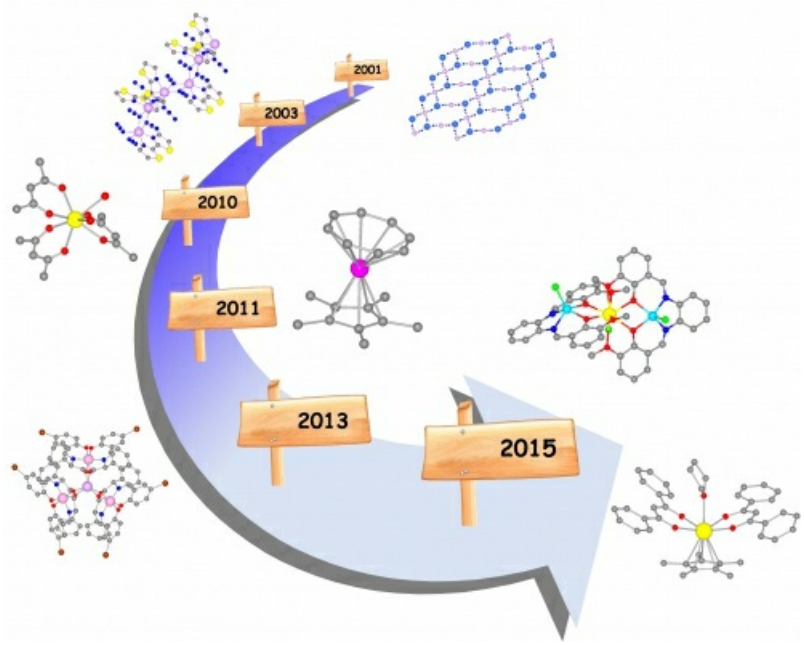
Magnetic and electric anisotropy in molecular crystals

Song Gao[1]
[1]*College Of Chemistry And Molecular Engineering, Peking University, Beijing, China*
E-mail: gaosong@pku.edu.cn

After the milestone discovery of the first single-molecule magnets (SMMs) Mn12ac, many new SMMs were structurally and magnetically characterized. The most studied systems are mainly conventional coordination compounds with polynuclear structures. From 2011, we explored a series mononuclear lanthanide or transition-metal organometallic molecules, which behave as a single-ion magnets (SIMs) [1-3]. It opened a door of SMMs to the chemists in organometallic chemistry. We hope these systems can provide new understandings of slow magnetic relaxation and new clues on the design and synthesis of molecular nanomagnets. In this talk, magnetic anisotropy in single-ion magnets (SIMs), and electric anisotropy in molecular magnets will be discussed: (1) Magnetic easy axes direction of mononuclear magnetic molecule in a molecular crystal can be determined by angular-resolved magnetometry and ab initio method, and tuned by surrounding ligands coordinated to the central magnetic metal ion. It will be helpful to design high-performance single-ion magnets (SIMs). (2) A hybrid layered perovskite metal formate crystal displays significant anisotropic dielectric and magnetic responses, and both electric and magnetic polarization directions turn 90 degree from the direction perpendicular to the layers to the direction parallel to the layers.

We are grateful to the NSFC, the National Basic Research Program of China for financial support.

[1] Yao, X.-N. et al. (2017). J. Am. Chem. Soc. 139, 373-380.
[2] Meng, Y.-S.et al. (2016). Acc. Chem. Res. 49, 2381-2389.
[3] Jiang, S.-D. et al. (2011). J. Am. Chem. Soc. 133, 4730-4733.



Keywords: Magnetic anisotropy, Electric anisotropy, Molecular crystals