北京大学量子材料科学中心

International Center for Quantum Materials, PKU

Weekly Seminar

Hybrid inorganic-organic materials: a new family in condensed matter physics

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Time: 4:00pm, November 11, 2015 (Wednesday)

时间：2015年11月11日 （周三）下午4:00

Venue: Room w563, Physics building, Peking University

地点：北京大学物理楼，西563会议室

Abstract

In recent years there have been remarkable interests in the synthesis and investigation of hybrid organic-inorganic materials, such as the metal-organic frameworks (MOFs), due to their potential applications in gas storage, catalysis, nonlinear optics, photoluminescence, solar cell, as well as their intriguing magnetic and electric properties for fundamental science study. In this talk, I present our recent progress on the novel magnetic and multiferroic properties in a series of MOFs with a perovskite-like structure. Resonant quantum tunneling of magnetization (RQTM), a phenomenon previously only seen in the single-molecule quantum magnets, has been observed in a Fe-based MOF. The coexistence of magnetic ordering and ferroelectric/antiferroelectric ordering makes these hybrid MOFs a new type of multiferroic materials. Meanwhile, the magnetoelectric coupling effects, i.e., magnetic field control of electric polarization and electric control of magnetization, have been firstly demonstrated in MOFs by us. Moreover, the simultaneous presence of RQTM and magnetoelectric coupling in the MOF yields a completely new effect, termed as resonant quantum magnetoelectric effect. The rich diversity of physical behaviors in hybrid inorganic-organic materials opens up exciting new frontiers for condensed matter physics.

About the speaker

孙阳，1996年毕业于中国科学技术大学物理系，获学士学位。2001年获中国科学技术大学理学博士学位。2001—2004年在美国University of Illinois at Urbana-Champaign 及Rice University作博士后。2004年入选中国科学院“百人计划”。现为中国科学院物理研究所磁学国家重点实验室研究员，博士生导师，课题组长。主要从事磁学与磁性材料研究，已发表论文100余篇，被引用1600余次。曾获得 “全国百篇优秀博士论文”，物理所“科技新人奖”等荣誉与奖励。现担任Scientific Reports编委会成员，Phys. Rev. Lett.，Nature Comm.，JACS等国际著名学术期刊论文审稿人。