“固体所青联会”第二十二期学术论坛

报告题目：**Spin-orbit coupling induced phenomena in low-dimensional magnetic materials**

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报告时间：**2014年12月19日（周五）14:00**

报告地点：固体所新楼520会议室

举办单位：中科院固体物理研究所青年联合会

中科院青年创新促进会合肥物质科学研究院小组

报告摘要：**Low-dimensional magnetic materials have been proposed as building blocks for many intriguing applications, ranging from spintronics to quantum information processing, due to their novel properties which do not present in their bulk counterparts. Many new features of low-dimensional magnetic materials, such as magnetic anisotropy (MA), magneto-optic Kerr effect (MOKE) and quantum anomalous Hall effect (QAHE), are induced by the spin-orbit coupling (SOC). Understanding the role of the SOC in these phenomena is crucial for both fundamental interests and practical applications. In particular, we revealed the underlying physics about the substrate induced spin-reorientation transition (SRT) in Fe-phthalocynine (FePc) molecule. We also demonstrated the feasibility of achieving giant magnetic anisotropy energy (MAE) larger than 60 meV and high structural stability, in systems with transition metal dimers on defected and decorated graphene. For both cases, we found that their magnetic anisotropy can be conveniently manipulated by using external electric field. Furthermore, we proposed a new robust topological state—Chern half metal—in Co deposited graphene. This system is manifested by a trivial metal in majority spin channel but a Chern insulator in minority spin channel.**

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