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The Magnetic Properties of Individual Atoms/Molecules on Solid Surfaces

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Control over charge and spin states at the single atom and molecule level is crucial not only for a fundmental understanding of charge and spin interactions but also represents a prerequisite for development of spin tronics. Recently, we demonstrate that the Kondo resonance of manganese phthalocyanine (MnPc) molecules can be reversibly switched via a robust route through chemical absorption and desorption of a single hydrogen atom, and further the site-dependent g factor mapping was revealed within a dehydrogenated-MnPc molecule within intramolecular resolution. The modulation of magnetic properties and Kondo effect of magnetic adatoms on graphene layer was also studied, and we show the first discovery of a Kondo effect caused from a magnetic impurities doped in graphene layer in experiment. Finally I will present the investigation of different inter-atomic spin interactions of artificial Mn nanolusters registered on graphene with magnetic field dependent inelastic spin excitation spectroscopy. All the dimers observed exhibit an antiferromagnetic singlet ground state and spin transitions from singlet to triplet states, but their AFM coupling strength shows unique dependence on their site registration on the graphene template. More intriguing spin coupling can be found in graphene mediated non-collinear Mn trimer. The exchange energies cannot be understood by direct spin exchange mechanism, but suggesting the non-local Ruderman-Kittel-Kasuya-Yosida (RKKY) indirect spin exchange mechanism through substrate modulation, which has not yet been achieved in graphene so far.The works open up new opportunities to access local spin properties and quantum states at the ultimate molecular limit.

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1) J. D. Ren, H. M. Guo, and H. J. Gao et al, Phy. Rev. Lett. 119, 176806 (2017)
2) J. D. Ren, H. M. Guo, and H. J. Gao et al, Nano Lett. 14, 4011 (2014)
3) J. D. Ren, X. Wu, and H. M. Guo et al, Appl. Phys. Lett. 107, 071604(2015)
4) L. W.Liu, K. Yang, and H. J. Gao et al, Sci.Rep.3, 1210 (2013)
5) L. W. Liu, K. Yang, and H. J. Gao et al, Phys. Rev. Lett. 99, 106402 (2015)

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