Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

**Novel effects at metal-organic interfaces: Magnetic interactions between high-spin molecules and non-magnetic metals triggered by interface chemistry** AMILCAR BEDOYA, LUIS HUESO[1], CiC nanoGUNE, Donostia-San Sebastian, Spain — The adsorption of molecules on metal surfaces presents a rich variety of physical phenomena, which move from the creation of interface dipoles to hybridization and charge-transfer via strong chemisorption. In the strong interaction regime, some metal-molecule systems could even undergo a surface rearrangement and lead to the formation of new magnetically active phases, which could be used as templates for spin-injection or magnetization switching. For this purpose, we study the interaction of novel high-spin quinoline molecules ($Tb_3q_9$) with non-magnetic metallic surfaces. The molecules preserve their structural, chemical and magnetic properties when deposited onto noble metal (Au) and passivated (Si02) surfaces; while the adsorption on reactive metals such as Cu induces a magnetic phase at the interface involving molecular Tb-atoms, as measured via SQUID magnetometry and X-ray magnetic circular dichroism (XMCD). Remarkably, the magnetic ordering persists up to room-temperature for the $Tb_3q_9$/Cu system and is linked to a chemically-triggered change in structure and stoichiometry of the interfacial species. The occurrence of a molecular-driven magnetic phase at otherwise nonmagnetic metal surfaces highlights the importance of interface chemistry to tailor new magnetic interfaces and functional hybrid structures for spintronic applications.

[1]and IKERBASQUE, Basque Foundation for Science, Bilbao, Spain

Amilcar Bedoya
CiC nanoGUNE, Donostia- San Sebastian, Spain

Date submitted: 15 Nov 2013 Electronic form version 1.4