Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Sorting Category: 10.1.7 (E)

**Tunnel magnetoresistance in Self-Assembled Monolayers Based Tunnel Junctions** RICHARD MATTANA, CLÉMENT BARRAUD, SERGIO TATAY, MARTA GALBIATI, PIERRE SENEOR, KARIM BOUZEHOUANE, ERIC JACQUET, CYRILE DERANLOT, ALBERT FERT, FRÉDÉRIC PETROFF, Unité Mixte de Physique CNRS/Thales — Organic/molecular spintronics is a rising research field at the frontier between spintronics and organic chemistry. Organic molecule and semiconductors were first seen as promising for spintronics devices due to their expected long spin lifetime. But an exciting challenge has also been to find opportunities arising from chemistry to develop new spintronics functionalities. It was shown that the molecular structure and the ferromagnetic metal/molecule hybridization can strongly influence interfacial spin properties going from spin polarization enhancement to its sign control in spintronics devices. In this scenario, while scarcely studied, self-assembled monolayers (SAMs) are expected to become perfect toy barriers to further test these tailoring properties in molecular magnetic tunnel junctions (MTJs). Due to its very high spin polarization and air stability LSMO has positioned itself as the electrode of choice in most of the organic spintronics devices. We will present a missing building block for molecular spintronics tailoring: the grafting and film characterization of organic monofunctionalized long alkane chains over LSMO. We have obtained 35% of magnetoresistance in LSMO/SAMs/Co MTJs. We will discuss the unusual behaviour of the bias voltage dependence of the TMR.

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Date submitted: 08 Dec 2011 Electronic form version 1.4