Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Understanding spin dependent transport through Alq3 molecules[1] C. BARRAUD, P. SENEOR, R. MATTANA, S. FUSIL, K. BOUZEHOUANE, R. GUILLEMET, C. DERANLOT, Unite mixte de Physique CNRS/Thales, P. GRAZIOSI, L. HUESO, I. BERGENTI, V. DEDIU, ISMN-CNR, Via Gobetti 101, 40129 Bologna, Italy, F. PETROFF, A. FERT, Unite mixte de Physique CNRS/Thales — Molecular and organic spintronics offers the opportunity to play with chemical versatility and to bring the spin degree of freedom to electronics devices. We will show how, as a contender to commonly used inorganic materials, organic/molecular based spintronics devices can exhibit very large magnetoresistance and lead to tailored spin polarizations. First we will report on giant tunnel magnetoresistance of up to 300% in a (La,Sr)MnO_3/Alq_3/Co nanometer size magnetic tunnel junctions. Samples are nanofabricated using a conductive tip AFM nanolithography process in order to circumvent problems such as inhomogeneity and strong metal diffusion. In a second part we will present a spin dependent transport model giving a new understanding of spin injection into organic materials. We will show how one could tune spin injection by molecular engineering.

[1]Financial support from EU-FP6-STRP under grant No 030370 OFSPIN

Richard Mattana
Unite mixte de Physique CNRS/Thales

Date submitted: 20 Nov 2009 Electronic form version 1.4