

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Magnetoresistance effects in phthalocyanine based magnetic tunnel Junctions¹ C. BARRAUD, R. MATTANA, P. SENEOR, S. FUSIL, K. BOUZEHOUE, C. DERANLOT, F. PETROFF, A. FERT, Unite mixte de Physique CNRS/Thales, J.B. BEAUFRAND, D.J. KIM, R. RAKSHIT, J. ARAKSKI, S. BOUKARI, M. BOWEN, E. BEAUREPAIRE, IPCMS, CNRS and Université Louis Pasteur — We will report on the fabrication and magneto-transport properties of nanometer size organic magnetic tunnel junctions based on the cobalt-phthalocyanine organic semiconductor. We will present spin dependent transport measurements in Co/CoPc/Co magnetic tunnel junctions where the thickness of the organic semiconductor is only few nm. We have observed a significant magnetoresistance effect at low temperature. Two contributions to the magnetoresistance are isolated: a tunnel anisotropic magnetoresistance (TAMR) and a spin valve effect associated to the magnetic configuration of Co electrodes (parallel and antiparallel magnetic configurations). Strong variations of coercive fields with respect to angle measurements and to the bias voltage were observed. The bias dependence of MR effects was also studied and revealed an interesting new behavior compared to standard inorganic magnetic tunnel junctions. All these results will be discussed.

¹Financial support from EU-FP6-STRP under grant No 030370 OFSPIN and ANR PNANO under grant SPINORGA.

Richard Mattana
Unite mixte de Physique CNRS/Thales

Date submitted: 18 Dec 2009

Electronic form version 1.4