

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Magnetic Tunnel Junctions Based On Alkanethiol Self Assembled Monolayers SOPHIE DELPRAT, BENOIT QUINARD, Unite Mixte de Physique CNRS/Thales and Universite Paris-Sud, 91767 Palaiseau, France, MARTA GALBIATI, MICHELE MATTERA, SAMUEL MANAS-VALERO, ALICIA FORMENT-ALIAGA, SERGIO TATAY, ICMOL, Universitat de Valencia, 46980 Paterna, Spain, CYRILE DERANLOT, SOPHIE COLLIN, KARIM BOUZE-HOUANE, RICHARD MATTANA, PIERRE SENEOR, FREDERIC PETROFF, Unite Mixte de Physique CNRS/Thales and Universite Paris-Sud, 91767 Palaiseau, France — Molecular spintronics has opened novel and exciting functionalities for spintronics devices. Among them, it was shown that spin dependent hybridization at metal/molecule interfaces could lead to radical tailoring of spintronics properties[1]. In this direction Self-Assembled Monolayers (SAMs) appear to be a very promising candidate with their impressive molecular scale crafting properties. Despite all the promising possibilities, up to now less than a handful of experiments on SAMs as spin-dependent tunnel barriers have been reported[2] at low temperatures, but already showing potential[3]. Towards room temperature spin signal, we studied magnetic tunnel junctions based on alkanethiol and conventional ferromagnets such as Co,NiFe for which we developed a process to recover the ferromagnet from oxidation[4]. We will present NiFe/SAMs/Co molecular magnetic tunnel junctions with magnetoresistance effects up to 10% observed at 300K. [1] Galbiati et al., MRS Bull. 39, 602 (2014) [2] Wang et al., APL, 89, 153105 (2006) ; Petta et al., PRL, 93, 136601 (2004) [3] Galbiati et al., Adv. Mat. 24 6429, (2012) [4] Galbiati, Delprat et al. , AIP adv. 5, 057131 (2015)

Pierre Seneor
Unite Mixte de Physique CNRS/Thales and Universite Paris-Sud

Date submitted: 29 Nov 2016

Electronic form version 1.4