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**Magnetoresistance in oxidized Ni nanocontacts** D. JACOB, Universidad de Alicante, J. FERNANDEZ-ROSSIER, J. J. PALACIOS — Whether or not ferromagnetic nanocontacts display large magnetoresistance (MR) is still a matter of debate [1,2]. From the theory side it has been shown[3] that MR in pure Ni nanocontacts is certainly not large in good agreement with recent experiments [2]. Here we explore the effect of oxygen atoms in the electronic structure and transport of nickel nanocontacts. Since bulk nickel oxide is an insulating antiferromagnet, nano-oxidized nickel is an interesting system on its own. Here we present ab-initio quantum transport calculations of Ni nanocontacts in the presence of oxygen adsorbates in the contact region. We show that the presence of a single oxygen atom leads to strongly spin-polarized transport for parallel alignment of electrodes magnetizations while for antiparallel alignment the conduction is strongly suppressed resulting in large MR.

- (1) H. D. Chopra, Nature Materials 4, 832 (2005)
- (2) K. I. Bolotin et al., cond-mat/0510410; W. F. Egelhoff et al., J. Appl. Phys. 95, 7554 (2004)
- (3) D. Jacob et al., Phys. Rev. B 71, 220403(R) (2005)

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