Plenary [ ] Invited lecture [X] Oral presentation [ ] Poster [ ]

Section: 1 [X] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ]

SPIN POLARIZED TRANSPORT IN Fe/NaBr(001) BASED HETEROJUNCTIONS

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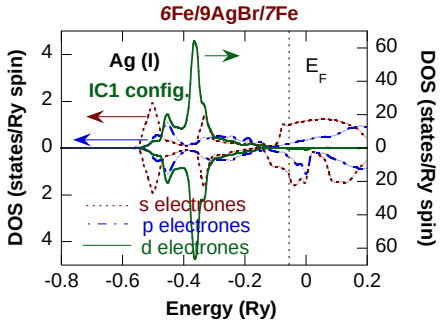
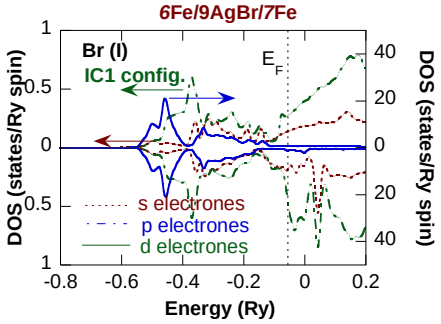
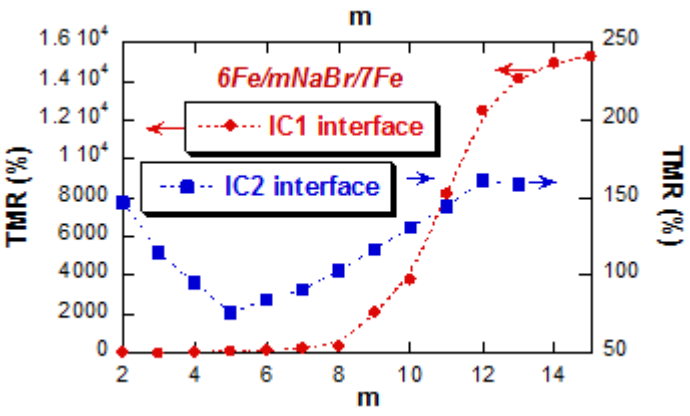
The electronic, magnetic and spin polarized transport properties of Fe/NaBr/Fe(001) heterostructures were investigated by means of ab initio surface Green's function technique for surface and interfaces. Two model interfaces were considered, IC1, with Fe atoms situated atop Na and Br positions and IC2 with Fe atoms sitting above the hollow between Na and Br sites. The total energy calculations showed that sharp Fe/AgCl(001) interfaces are possible. Due to location of iron Fermi level near the bottom of the NaBr conduction band, for both interfaces, there is a charge transfer between the magnetic slabs and spacer and thus formation of metallic induced gap states (MIGs) in the band gap of the barrier, as exemplified in Fig.1 for interfacial Ag(I) and Br(I) layers in IC1 configuration.





The conduction decreases exponentially with the barrier thickness. High values of the tunneling magnetoresistance (> 10^4 %) can be seen in 6Fe/mNaBr/7Fe heterojuncions for spacer thickness m > 10 in the case of IC1 configuration. The propagating direct tunneling states along the NaBr spacer are of Δ_1 and Δ_5 symmetry. The highly magneoresisitive effect observed in Fe/NaBr/Fe(001) heterojunctions make this system of interest in the context of spin electronics.



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