

Abstract Submitted
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Antiferromagnetic coupling in Fe/Si/Fe structures with Co “dusting” layers RASHID GAREEV, MATTHIAS KIESSLING, Uni Regensburg, MATTHIAS BUCHMEIER, Uni Muenster, GEORG WOLTERS DORF, CHRISTIAN BACK, Uni Regensburg, UNI REGENSBURG TEAM, UNI MUENSTER COLLABORATION — Artificial antiferromagnetic (AF) tunnelling Si-based structures are attracting a special interest due to extremely strong AF coupling, which exceeds $5\text{mJ}/\text{m}^2$, low resistance-area product and resonant-type tunnelling magnetoresistance (TMR) [1]. A promising way to regulate the spin polarization in TMR structures is to insert Co “dusting” layers at interfaces [2]. We present AF coupling in Fe/Co/Si/Co/Fe epitaxial structures with sub-monolayer –thick Co “dusting” layers at interfaces and different thicknesses of the Si spacer. We determined the strength of AF coupling from spin-wave frequencies and angular dependence of the resonance field of the ferromagnetic resonance, as well as MOKE hysteresis. We found the AF coupling near $0.1\text{mJ}/\text{m}^2$ which decays with the spacer thickness and detectable for 2nm-thick Si spacers. The presented results can open an avenue for magnetotransport studies in AF-coupled structures using interface engineering. [1]. R.R. Gareev *et al*, JMMM **240**, 235 (2002), R.R. Gareev *et al*, APL **88**, 172105 (2006). [2]. Y. Wang, X.F. Han, and X.-G. Zhang, APL **93**, 172501 (2008).

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