Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Low-Resistance Spin Filtering from Ferromagnet-Graphene-Ferromagnet Junctions ENRIQUE COBAS, OLAF VAN 'T ERVE, SHU-FAN CHENG, BERRY JONKER, US Naval Research Laboratory — Nickel-graphene interfaces have been recently demonstrated to habor spin polarizations of up to 42% with Ni/Graphene/MgO/Co heterostructures exhibiting negative out-of-plane magnetoresistances of 31% [1]. These experiments agree qualitatively with theoretical predictions of spin filtering at planar Ni-Graphene and Co-Graphene interfaces [2]. We previously demonstrated room temperature magnetoresistance in vertical NiFe-Graphene-Co junctions [3]. Now we have fabricated high-quality NiFe(111)-Graphene-Co and NiFe(111)-Graphene-Fe junctions grown in-situ that exhibit high MR at room temperature while maintaining a very low interface resistance. Such junctions embody an excellent source of spin-polarized current for spintronics applications like fast and non-volatile magnetic random access memory.

[1] Martin et al., ACS Nano 8 (8), 7890, 2014.
[2] Karpan et al., Phys. Rev. Lett. 99, 176602, 2007
[3
Cobas et al., Nano Letters 12, 3000, 2012.

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Date submitted: 14 Nov 2014 Electronic form version 1.4