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**Magnetic behavior of PdNi nanowires and extended thinfilms as a function of the film thickness** JUAN-CARLOS GONZALEZ-PONZ, JOHN HENDERSON, ENRIQUE DEL BARCO, University of Central Florida, BARBAROS ÖZYILMAZ, Columbia University — Recently $Pd_{1-x}$ $Ni_x$ alloy has attracted considerable attention as ferromagnetic electrodes in carbon based lateral spin valves. Its wetting properties on carbon nanotubes (CNT) leads to transparent contacts, while its room temperature ferromagnetic behavior provides a means for spin injection. Surprisingly, in the case of CNTs a tunneling barrier between the PdNi and the CNT is unnecessary for spin injection, making PdNi ideal for electrodes in carbon-based electronic devices. Here we report studies of both the anisotropic magneto-resistance (AMR) of PdNi nanowires with varying widths and the ferromagnetic resonance (FMR) behavior of PdNi thin films with varying thickness. The AMR revealed strong angular field dependence with respect to the nanowire, indicating magnetization tilted out of the plane of the wire. The tilt angle decreases with increasing the nanowire width. Room temperature broad-band (5-50GHz) FMR measurements of extended films show in-plane magnetization and out-of-plane uniaxial anisotropy ($K$), which is not large enough to overcome the demagnetization energy. We speculate that the constriction of a dimension in the film plane modifies the demagnetization factors allowing the out-of-plane anisotropy to push the magnetization out of the plane for small nanowire width.

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