Abstract Submitted
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Synthesis of and mesoscopic charge transport in magnetically-doped Bi_2Se_3 nanoribbons J.J. CHA, J.R. WILLIAMS, D. KONG, S. MEISTER, A.J. BESTWICK, P. GALLAGHER, D. GOLDHABER-GORDON, YI CUI, Stanford University — A simple band structure and a large bulk band gap have allowed Bi_2Se_3 to become a reference material for the newly discovered three-dimensional topological insulators, which exhibit topologically-protected conducting surface states that reside inside the bulk band gap. Theoretically, introducing magnetic impurities in Bi_2Se_3 is predicted to open a small gap in the surface states by breaking the time-reversal symmetry. We present synthesis of magnetically doped Bi_2Se_3 nanoribbons using the vapor-liquid-solid growth method. Studying Bi_2Se_3 in nanostructures is useful because of the high surface-to-volume ratio. Low-temperature magneto-transport measurements in the mesoscopic regime show clear differences between the undoped and doped Bi_2Se_3 nanoribbons, confirming the presence of magnetic impurities in the Bi_2Se_3 nanoribbons.

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