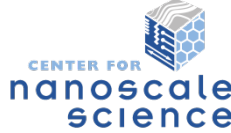
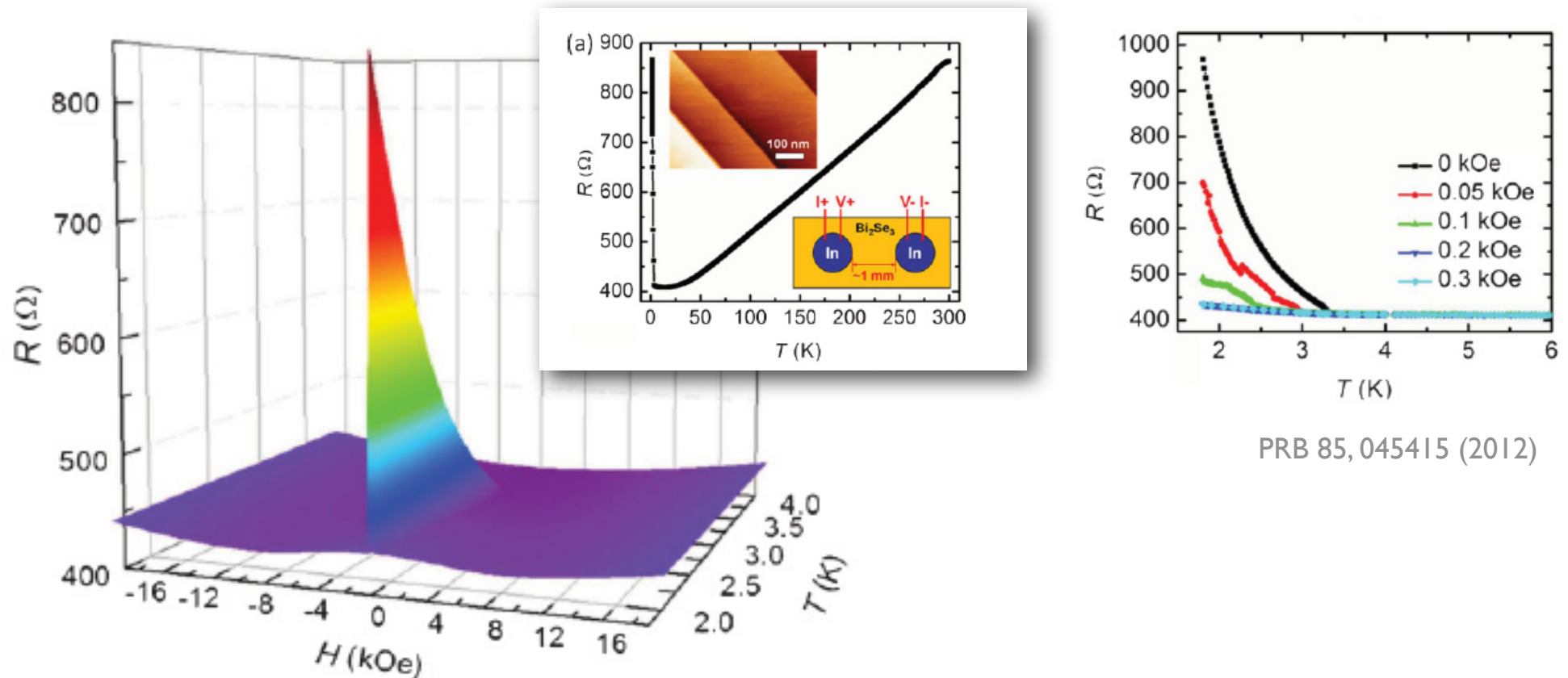


Interplay between topological Insulator and superconductor



Penn State MRSEC DMR 0820404: J. Wang, C.Z. Chang, H.D. Li, K. He, D.M. Zhang, M. Singh, X.C. Ma, N. Samarth, M.H. Xie, Q.K. Xue, M.H.W. Chan



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The resistance of a thin-film topological insulator Bi_2Se_3 shows an abrupt and prominent upturn when the electrodes (In, Al or V) becomes superconducting. In turn, the Bi_2Se_3 film weakens the superconductivity of the electrodes, significantly reducing both their transition temperature and the critical field. These results highlight the interplay of the Cooper pairs in the electrodes and the spin-polarized current of the surface states in Bi_2Se_3 , an emerging material with fundamentally new electron-transport properties.