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Preparation and transport measurements of high T_c disordered MgB_2 thin films[1] LI ZHANG, WOLTER SIEMONS, NICHOLAS BREZNAY, AHARON KULPITULNIK, MALCOLM BEASLEY, Stanford University — In this talk we present a method using pulsed laser deposition to fabricate single-layer disordered MgB_2 thin films. Both Mg and stoichiometric MgB_2 targets are used during the deposition. The films have been characterized by AFM, XPS, and XRD to establish the quality of the surface and the structural and compositional uniformity of the films. Though the uniformity of the films is still under investigation, transport measurements show that the films exhibit behavior characteristic of the superconductor-insulator transition at relatively high temperatures (2 to 5K). We will also review some preliminary low temperature and high magnetic field transport measurement results. Also of interest is the very low spin-orbit scattering expected in MgB_2 due to the low Z of Mg and B. This work is funded by DoE and NSF.

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