Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Induced Superconductivity in Iron Telluride Films[1] YUEFENG NIE, DONALD TELESCA, JOSEPH BUDNICK, BORIS SINKOVIC, BARRETT WELLS, University of Connecticut — The 11-type iron chalcogenide superconductors have the simplest crystal structure of the iron-based supercontuctors, consisting only of buckled Fe-anion planes. We grew FeTe films epitaxially on MgO substrates by pulsed laser deposition. X-ray diffraction shows our films to be tetragonal with c axis aligned with the substrate normal. By adding oxygen to the system, superconductivity was induced in the FeTe films. The onset temperature is near 10 K. X-ray absorption measurements show that in the FeTe films which become superconducting, the nominal Fe valence state increases from largely 2+ to 3+. This suggests that the path towards achieving superconductivity in O doped FeTe is quite different from the more standard procedure of substitutionally exchanging isoelectronic Se onto Te sites.

[1]The work is supported by the US-DOE through contract # DE-FG02-00ER45801.

Yuefeng Nie
University of Connecticut

Date submitted: 24 Nov 2009 Electronic form version 1.4