

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Preparation and physical properties of Mg_xFeTe with tetragonal phase¹ W.H. LEE, M.C. CHUANG, K.J. SYU, S.C. CHEN, Department of Physics, National Chung Cheng University, Ming-Hsiung, Chia-Yi 621, Taiwan, ROC, Y.Y. CHEN, Institute of Physics, Academia Sinica, Taipei 115, Taiwan, ROC — Unlike $\text{Fe}_{1.01}\text{Se}$, which has a superconducting T_c near 8 K, Fe_{1+x}Te shows no superconductivity though it forms the same tetragonal structure with $0.06 < x < 0.17$. The excess Fe (2) in Fe_{1+x}Te not only stabilizes the PbO-type crystal structure with space group P4/nmm but also is strongly magnetic as an electron donor. According to the spin fluctuation driven scenario of superconductivity the results indicate that FeTe with doping is a likely higher-temperature superconductor. In order to reduce the magnetic strength and keep the same tetragonal structure in Fe_{1+x}Te , in this work, we have prepared single phase samples Mg_xFeTe with x around 0.1. Magnetic and electrical properties, the magnesium positions in the crystal structure as well as the possibility of high- T_c superconductivity in the Mg_xFeTe system investigated will be discussed.

¹Supported by the National Science Council of Republic of China under Contract Number NSC-102-2112-M-194-005-MY3.

W. H. Lee
Department of Physics, National Chung Cheng University

Date submitted: 15 Nov 2013

Electronic form version 1.4