Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Effects of pressure on T_c in $(Tl_{0.59}Cs_{0.26})Fe_{1.9}Se_2$[1] S.C. CHEN, K.J. SYU, H.H. SUNG, W.H. LEE, Department of Physics, National Chung Cheng University, C.C. LI, Y.Y. CHEN, Institute of Physics, Academia Sinica, W. H. LEE TEAM, Y. Y. CHEN TEAM — Hydrostatic-pressure (up to 0.96 GPa) dependence of T_c in a newly discovered Fe-based superconductor $(Tl_{0.59}Cs_{0.26})Fe_{1.9}Se_2$ is reported. The room temperature powder x-ray diffraction and crystallographic data provide the evidence for bulk superconductivity with T_c around 28 K in a tetragonal $ThCr_2Si_2$-type structure at ambient pressure. Static Magnetization measurements under pressure indicate that the linear increase in T_c is initially rapid (dT_c/dP = 9.9 K GPa^{-1}) but slows down to dT_c/dP = 2.5 K GPa^{-1} for P >0.18 GPa. The T_c of the superconducting phase is 32 K at pressure P = 0.96 GPa. The simple rigid band model may not be sufficient to account for the observations if the lattice parameters of the unit cell are linearly decreased with the hydrostatic pressure.

[1]Supported by the National Science Council of Republic of China under Contract Numbers NSC-99-2112-M-194-006-MY3 and NSC-101-2811-M-194-016.

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

Date submitted: 27 Dec 2012 Electronic form version 1.4