Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Pressure effects on superconductivity and magnetism in $FeSe_{0.88}$ and $FeSe_{1-x}Te_x$ CHIEN-LUNG HUANG, CHI-CHIE CHOU, KUO-FENG TSENG, YI-LIN HUANG, FONG-CHI HSU, KUO-WEI YEH, MAU-KUEN WU, HUNG-DUEN YANG, National Sun Yat-sen University — We have performed the pressure (P) dependence of ac, dc susceptibility and resistivity measurements on iron chalcogenides $FeSe_{0.88}$, $FeSe_{0.5}Te_{0.5}$, FeTe and $FeTe_{0.9}$. The superconducting transition temperature (T_c) of $FeSe_{0.88}$ is found to increase with P linearly at a rate of $dT_c/dP \sim 3.09\times10^{-2}$ K/kbar, while the T_c of $FeSe_{0.5}Te_{0.5}$ increases nonlinearly with an initial rate of 1.47K/kbar then saturates at $P \sim 18$ kbar. Such the enhancement of T_c might be attributed to an increase of density of states. There is no indication of superconductivity observed in FeTe and $FeTe_{0.9}$, which is inconsistent with the result of theoretical calculation, and it might be due to the existence of long range magnetic spin coupling that inhibits the formation of superconductivity mediated by spin fluctuations, which is applied to describe the mechanism in Fe-based superconductors.

Chien-Lung Huang
National Sun Yat-sen University

Date submitted: 29 Oct 2008 Electronic form version 1.4