Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Growth and optical characterization of distorted octahedral (T') WTe_2 and $MoTe_2$ SHAO-YU CHEN, THOMAS GOLDSTEIN, JUN YAN, Univ of Mass - Amherst, UNIV OF MASS - AMHERST TEAM — The polymorph of transition metal dichalcogenide (TMDC) has recently attracted great attention due to its novel physical properties. We grow distorted octahedral (T') WTe_2 and $MoTe_2$ by chemical vapor transport and rapid thermal quenching methods. The bulk and few layer samples exhibit distinct optical properties as compared with the the well-investigated semiconducting hexagonal (H) TMDCs. We observe sharp intralayer, as well as interlayer optical phonon modes, that display angular dependent intensities consistent with the estimation by Raman tensor calculation. We also demonstrate *in-situ* phase transition of $MoTe_2$ from H to T' *via* rapid annealing in an electrically heated microfurnace. This enables ramping of the temperature from above 900C to room temperature within seconds. This well-controlled annealing process is promising for innovative fabrication of novel 2D materials devices.

Shao-Yu Chen
Univ of Mass - Amherst

Date submitted: 06 Nov 2015 Electronic form version 1.4