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Raman Scattering of Atomic Layers of $\text{Mo}_x\text{W}_{1-x}\text{Te}_2$ Alloy THOMAS GOLDSTEIN, SHAO-YU CHEN, University of Massachusetts Amherst, Physics Department, ASHWIN RAMASUBRAMANIAM, University of Massachusetts Amherst, Mechanical Industrial Engineering Department, JUN YAN, University of Massachusetts Amherst, Physics Department — The various compounds and phases of atomically thin transition metal chalcogenides (TMDCs) are of great interest for both optical/electrical applications and fundamental physics research. This talk addresses the growth and polarization resolved Raman analysis $\text{Mo}_x\text{W}_{1-x}\text{Te}_2$ alloy crystals. In chemical vapor transport (CVT) growth, differing reaction rates between the transport gas and the transition metals leads to crystals of varying composition forming as a function of growth time. For $\text{Mo}_x\text{W}_{1-x}\text{Te}_2$ this causes both H phase (low W) and T' phase (high W) crystals to form. Raman analysis of atomically thin H phase exfoliated crystals shows all zone center modes of H- MoTe_2 (<http://www.nature.com/articles/srep28024>), consistent with previous measurements. In addition we observe several new Raman bands. From an analysis of their energies, layer number dependence, and symmetries, two of these additional peaks may be associated with H- WTe_2 .

Thomas Goldstein
University of Massachusetts Amherst

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