Abstract Submitted
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Raman characterization of few-layered 1T'-$MoTe_2$[1] IRVING HERMAN, DENNIS WANG, ALI DADGAR, Columbia Univ, SANG-WOOK CHEONG, Rutgers, The State University of New Jersey, ABHAY PASUPATHY, Columbia Univ — Transition metal dichalcogenides (TMDs) exhibit a wealth of physical phenomena that have been studied via electronic transport and optical characterization because of their potential device applications in the 2-D limit. In particular, theory has predicted that a certain subset of TMDs, specifically those in the structurally distorted octahedral (1T') phase, are large-gap quantum spin Hall (QSH) insulators. Here we characterize the thickness of one such TMD, 1T'-$MoTe_2$, down to the monolayer limit using Raman spectroscopy and compare our results to atomic force microscopy (AFM) measurements. Our goal is to determine how thinning it down via micromechanical exfoliation changes the intensities and frequencies of its Raman modes, thus enabling one to track layer dependence in a definitive yet minimally invasive manner in much the same way used for graphene and other layered materials.

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