

Abstract Submitted
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Raman Characterization of Graphene and 2D TMD Heterostructures BENJAMIN DERBY, American University, National Institute of Standards and Technology, ANGELA HIGHT WALKER, National Institute of Standards and Technology — We report efforts to produce and characterize graphene and two-dimensional transition-metal dichalcogenides (TMD) heterostructures. Using PDMS stamps, exfoliation of graphene, MoS₂, h-BN, and TaS₂ precedes the stacking of these mono- and few layers into heterostructures. The goal is to engineer mis-orientation to enhanced Raman signatures of various layers within the heterostructures. Previous studies have reported a Raman signal strength that is angle dependent between bi-layers [1]. Using resonant Raman spectroscopy, we probe the quality of these constructed heterostructures. Ultimately, we plan to combine our optical measurements with an applied magnetic field to probe the complex magneto-Raman interaction. Previous studies [2] show a magneto-phonon resonance at specific field strengths and laser excitations. Our results to date will be summarized.

[1] K. Kwanpyo *et al.* Phys. Rev. Lett. **108**, 246103 (2012)

[2] C. Qiu *et al.* Phys. Rev. Lett. **88**, 165407 (2013)

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