

Abstract Submitted
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Novel Raman instrumentation for characterizing 2D nanomaterials ANGELA HIGHT WALKER, National Institute of Standards and Technology, Gaithersburg, MD 20899 — We have designed and constructed a unique Raman microscope system to enable diffraction limited measurements of graphene and two-dimensional transition-metal dichalcogenides (TMD). The design enables low frequency phonon measurements down to ten wavenumbers through a triple grating Raman spectrometer, as well as resonance Raman spectroscopy through multiple laser excitation lines throughout the visible region. Through coupling to a cryogen-free magnet system, Raman spectra can be collected while the sample is in fields up to 9 Tesla and at temperatures from 4 K to 400 K. Uniquely, both Farady and Voight geometries are accessible. Furthermore, multiple electronic feedthroughs permit collecting Raman scatter from devices at varying voltages. Proof of concept measurements on TMDs will highlight the full capabilities of the instrumentation. Collaborations are sought to demonstrate the utility of the new instrumentation.

Angela Hight Walker
National Institute of Standards and Technology, Gaithersburg, MD 20899

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