

Abstract Submitted  
for the TSF15 Meeting of  
The American Physical Society

**Observation of classical and quantum coupling via tip-enhanced resonant Raman scattering.** YINGCHAO ZHANG, Texas AM U — Nano-scale optical analysis of several layers MoS<sub>2</sub> is demonstrated with spatial resolution of 20 nm by tip-enhanced Raman spectroscopy (TERS). We analyze different optical signatures at the edges and near the center of the MoS<sub>2</sub> flakes. With controlling the tip-sample distance with subnanometer precision by atomic force, we explore the unique distance dependence behavior of the tip enhancement. We observe the transition from the classical near-field coupling to the quantum coupling regime. At subnanometer length range, TERS enhancement is significantly reduced, due to tunneling quantum effects.

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Date submitted: 09 Oct 2015

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