Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Dispersive Raman Scattering from n=1-4 Graphene Layers (nGLs) PETER EKLUND, Pennsylvania State University, AWNISH GUPTA, PSU — We present new Raman scattering results from nGLs (n=1, 2, 3, 4) in the range of 100 - 4500 cm^{-1}. Dispersive behavior of Raman peaks was probed at room temperature with 7 laser lines from 1.5-2.7 eV. In addition to the five Raman peaks reported previously, we report on the behavior of five new weaker features that appear in graphene (514.5 nm excitation) at ∼1882 cm^{-1}(∼ 125 cm^{-1}/eV), ∼2035 cm^{-1}(∼ 177 cm^{-1}/eV), ∼2218 cm^{-1}(∼ -43 cm^{-1}/eV), ∼3174 cm^{-1}(∼ -40 cm^{-1}/eV) and ∼4069 cm^{-1}(∼35 cm^{-1}/eV). The value in ( ) is the respective band dispersion, or shift with peak position per eV change in the excitation energy. The band dispersion is connected with the ratio of the phonon to Fermi velocity and stems from the double resonance (DR) scattering. New Raman bands that are only observed for nGLs (n >1) are found at ∼1510 cm^{-1}(∼ 16 cm^{-1}/eV) and 1737 cm^{-1} (∼ 10 cm^{-1}/eV). The identities of the new peaks will be discussed based on DR scattering and the phonon dispersion curve of graphene.

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Date submitted: 05 Dec 2007 Electronic form version 1.4