

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Origin of the 2450 cm^{-1} peak (G^* band) in the Raman spectrum of graphene RAMAKRISHNA PODILA, Clemson University, RAHUL RAO, Honda Research Institute US, MEHMET KARAKAYA, JINGYI ZHU, APPARAO RAO, Clemson University, DEPARTMENT OF PHYSICS AND ASTRONOMY, CLEMSON NANOMATERIALS CENTER, CLEMSON UNIVERSITY TEAM, HONDA RESEARCH INSTITUTE US TEAM — Here, we report the Raman studies of mechanically exfoliated and chemical vapor deposited (CVD) pristine, ion-irradiated, and Ndoped graphene (SLG, BLG, and FLG), which identify the origin of the so-called G^* -band in graphene $\sim 2450\text{ cm}^{-1}$. Our results show that the asymmetry of the G^* -band clearly increases with interlayer stacking, with the high frequency peak exhibiting more sensitivity to intralayer defects compared to the lower component. The sub-peaks (i.e., low and high frequency components) in the G^* -band were observed to merge with increasing excitation energy and could be understood in terms of the energy dependent scattering rates of photo-excited carriers.

Jingyi Zhu
Clemson University

Date submitted: 14 Nov 2014

Electronic form version 1.4