

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Polarization-dependent optical excitations in AB-stacked graphite CHIH-WEI CHIU, YUAN-CHENG HUANG, FENG-LIN SHYU, MING-FA LIN — The band structure of AB-stacked graphite exhibits two pairs of parabolic bands, where the band-edge states induce the peaks and shoulders in the density of states and in the joint density of states (JDOS). The dipole matrix element M^{cv} plays an important role in the relationship between the spectral function $A(\omega)$ and JDOS. It is strongly dependent on the polarization directions $\hat{\mathbf{E}}$ of the laser beams, showing an anisotropic property. The optical excitations do not fully reflect the special structures of JDOS. For $\hat{\mathbf{E}}$ on the graphene plane, $A(\omega)$'s are isotropic and include one sharp peak and some shoulders. As for $\hat{\mathbf{E}}$ along the stacking direction, $A(\omega)$ is much weaker, and only shows a broadened peak. The spectra contrast sharply with those of AA-stacked graphite.

Chih-Wei Chiu

Date submitted: 16 Dec 2010

Electronic form version 1.4