Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Electron excitations in two-dimensional buckled honeycomb lattices[1] PO-HSIN SHIH, PhD. Candidate, Department of Physics, National Cheng Kung University, YU-HUANG CHIU, Professor of Department of Applied Physics, National Pingtung University, MIN-FA LIN, Professor of Department of Physics, National Cheng Kung University — The two-dimensional buckled honeycomb lattices system exhibits the rich Coulomb excitation spectra, being dominated by the free carrier density, band structure, and transferred momentum (q). There are two kinds of plasmon peaks in the energy loss spectra, calculated from the random phase approximation. They are, respectively, revealed at low and middle frequencies. The former, which arises from the free carriers, belongs to acoustic mode. It's frequency depends on $\sqrt{q}$ at long wavelength limit. On the other hand, the latter is due to all the π-electronic collective excitations is an optical mode. Whether such plasmon can service is mainly determined by q. The frequencies and intensities of plasmon modes are very different among graphene, silicene, germanene, and Tin.

[1]Thanks the Ministry of Science and Technology of Taiwan (ROC) for funding support

Po-hsin Shih
PhD. Candidate, Department of Physics, National Cheng Kung University

Date submitted: 14 Nov 2014 Electronic form version 1.4