Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Graphene-based liquid crystal cell RAJRATAN BASU, US Naval Academy — The two dimensional graphene-honeycomb structure can interact with the liquid crystal's (LC) benzene rings through $\pi - \pi$ electron stacking. This LC-graphene interaction gives rise to a number of interesting physical and optical phenomena in the LC. We show that monolayer graphene films impose planar alignment on the LC. On the other hand, graphene acts as a transparent conductor. We show that a graphene-based LC cell can be fabricated without using any aligning layers and ITO electrodes. Graphene itself can be used as the electrodes as well as the aligning layers, obtaining an electro-optic effect of the LC inside the cell.

Rajratan Basu
US Naval Academy

Date submitted: 17 Nov 2016 Electronic form version 1.4