

Abstract Submitted  
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**Infrared magneto-optical Kerr and Faraday measurements of carbon nano-onions** M. MURAT ARIK, C.T. ELLIS, ALOK MUKHERJEE, JOHN CERNE, Department of Physics, University at Buffalo, SUNY, A. MOLINA ONTORIA, L. ECHEGOYEN, Department of Chemistry, University of Texas at El Paso, M.N. CHAUR, Departamento de Química Universidad del Valle, Cali (Colombia) — Carbon nano-onions (CNOs) are multilayer fullerenes in the form of concentric spherical graphene shells with diameters on the order of 10 nm. Angular resolved photoemission spectroscopy [1] has shown that the electronic structure of CNOs is more similar to graphite nanocrystals than fullerene molecules. Previously, we have observed rich Landau level structure in planar multilayer graphene using infrared Kerr and Faraday measurements [2], and now apply these techniques to CNOs. We report infrared (100-1000 meV) Faraday and Kerr measurements on CNOs at temperatures down to 10K and magnetic fields up to 7T. These infrared polarization-sensitive magneto-optical measurements allows us to study confinement effects in Dirac and bilayer quasiparticles, interlayer coupling among neighboring graphene shells, as well as inter-CNO coupling between neighboring CNOs. This work is supported by NSF-DMR1006078.

[1] M. Montalti, et al., Phys. Rev. B 67, 113401 (2003)

[2] C.T. Ellis, et al., Proc. 37th Intl. Conf. on Infrared, Millimeter and Terahertz Waves, 2012, Wollongong, Australia (2012)

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