

Abstract Submitted  
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**Cyclotron Resonance in Graphene at Ultrahigh Magnetic Fields**

L.G. BOOSHEHRI, Rice Univ., LANL, C.H. MIELKE, S.A. CROOKER, LANL, L. REN, E.H. HAROZ, Z. JIN, Z. SUN, Z. YAN, J.M. TOUR, J. KONO, Rice Univ. — To investigate the effects of intentional and unintentional doping on the conduction properties of CVD-grown large-area graphene, we have performed high-field cyclotron resonance (CR) measurements on graphene. We accessed ultrahigh magnetic fields using the Single-Turn Coil System at NHMFL-Los Alamos, which can produce peak fields over 300 T in  $\sim 2.5 \mu\text{s}$  pulses. We investigated magneto-infrared transmission at  $10.6 \mu\text{m}$  in pulsed ultrahigh magnetic fields up to 170 T for a variety of graphene samples on KRS-5 substrates with different levels of doping. Circularly polarized  $\text{CO}_2$  light was used to determine the carrier type of the doping, and temperature-dependent measurements were also performed. We observed a clear CR peak at  $\sim 50$  T corresponding to the  $n = 1$  to  $n = 2$  Landau level transition, which indicates that the Fermi energy measured from the Dirac point has to be  $\sim 250\text{-}400$  meV.

Layla Booshehri  
Rice Univ., LANL

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