Abstract Submitted
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Variable strain in graphene sealed microchambers studied with Raman spectroscopy[1] A.L. KITT, Boston University, J.W. SUK, University of Texas, Austin, S. REMI, S. AHMED, Boston University, R. PINER, K.M. LIECHTI, R.S. RUOFF, University of Texas, Austin, A.K. SWAN, B.B. GOLDBERG, Boston University — Raman measurements are a sensitive tool for evaluating strain in graphene. Graphene sealed cylindrical microchambers provide a unique way of generating strain. Suspended graphene avoids substrate interactions which make it difficult to evaluate the graphene response, e.g., combined graphene-substrate Poisson ratio, or slippage. Additionally, the system provides a wide range of strain states with different lattice symmetries. At a fixed external pressure, the strain state varies radially. The strain is biaxial in the center and changes gradually to only radial strain at the edges. The continuum model is evaluated to find the radial strain states. Combined with Raman Spectroscopy, several fundamental parameters can be measured. We will discuss the strain and polarization dependent splitting of the G and 2D bands and compare to previous works [1,2]. Furthermore, preliminary measurements of the strain dependence of thermal properties will be discussed.

[1] T. Mohiuddin et al, Phys Rev B 79, 1-8 (2009)
[2] M. Huang, et al, Nano Letters 10, 4074-9 (2010)

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