Abstract Submitted
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Strain-induced pseudo-magnetic fields and charging effects on CVD-grown graphene R.T.-P. WU, M.-L. TEAGUE, N.-C. YEH, Dept. of Physics, Caltech, Pasadena, CA 91125, S. YEOM, B.L. STANDLEY, D.A. BOYD, M.W. BOCKRATH, Dept. of Applied Physics, Caltech, Pasadena, CA 91125 — Atomically resolved imaging and spectroscopic characteristics of chemical vapor deposition (CVD) grown graphene on Cu are studied using scanning tunneling microscopy and spectroscopy. CVD-grown graphene remaining on Cu exhibits large ripples and appears strongly strained. Different regions show different lattice structures and electronic density of states (DOS). Ridges appear along the boundaries of different lattice structures, which reveal excess charging effects. The large, non-uniform strain induces pseudo-magnetic fields up to $\sim$50 Tesla, yielding integer and fractional quantum Hall effects (IQHE and FQHE) as quantized conductance peaks in the DOS. For CVD-grown graphene transferred from Cu to SiO_2, the average strain and the resulting charging effects and pseudo-magnetic fields are much reduced. Fourier transformation of the local DOS of strained samples as well as data on the effects of real magnetic fields versus pseudo-magnetic fields will be presented.
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R. T.-P. Wu
Dept. of Physics, Caltech, Pasadena, CA 91125

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