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Pseudo-magnetic fields in rippled nitrogenated graphene[1] SARA ROTHWELL, University of Minnesota, Minneapolis, 55455, FENG WANG, EDWARD CONRAD, Georgia Institute of Technology, Atlanta, GA, 30332, GANG LIU, LEONARD FELDMAN, Rutgers University, Piscataway, NJ, 08854, PHILIP COHEN, University of Minnesota, Minneapolis, 55455 — We demonstrate a new form of semiconducting graphene which is fabricated via controlled silicon sublimation on carbon face SiC($000\bar{1}$), previously seeded with a submonolayer of nitrogen. Nitrogenated graphene (NG) films between 2 - 8 layers have been examined [F. Wang et al. Nano Lett. 13, 4827 (2013)]. Scanning tunneling microscopy (STM) shows that NG films have ripples and folds over the entire surface. The ripples are of variable size but typically about 2 nm wide and 2-4 nm high. They meander from 5-20 nm in length. STM images show graphene flowing continuously over all folds. Scanning tunneling spectroscopy (STS) at 50 K shows peaks corresponding to Landau levels, implying a pseudo magnetic field of about 100 T. Little variation in peak position is noted in spectra taken across a fold. Levy et al. observed similar STS spectra taken near graphene nano bubbles [N. Levy et al. Science 329, 544 (2010)]. Near the Dirac point in NG STS spectra, the peaks are weak and broad corresponding to a bandgap of less than 1.5 eV. For a similar film, angle resolved photoemission measures an offset of 0.7 eV, which is a measurement of the portion of the gap below the fermi level. We thank N. Guisinger and T. Low for their support and valuable discussions.

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