

Abstract Submitted  
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**Focused Ion Beam Etching of Suspended Graphene Devices** BRITTON BAUGHER, PABLO JARILLO-HERRERO, Massachusetts Institute of Technology — In this talk we will present our achievements etching nanostructured devices into suspended graphene using a focused ion beam (FIB). Nanoscale devices were recently etched into graphene on a substrate using an FIB, but unfortunately, severe contamination from the beam and the substrate all but completely masked graphene's unique electrical properties in those devices. Suspended devices, however, may be able to escape this fate. Their separation from the substrate keeps the largest source of impurities at a distance and makes annealing far more effective. Annealed, suspended devices have been shown to survive a myriad of fabrication procedures while still achieving the highest mobilities found in graphene. Here we elucidate the effects of etchings in graphene by two different ion beams: a standard gallium focused ion beam and the recently developed helium ion beam. We will be presenting extensive electrical measurements on the devices we created, in addition to characterizations of the graphene after etching down to the atomic scale, as seen by TEM measurements.

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