

Abstract Submitted
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Electrical transport study of suspended graphene nanoribbons near the Dirac point¹ MING-WEI LIN, CHENG LING, YIYANG ZHANG, HYEUN JOONG YOON, MARK MING-CHENG CHENG, ZHIXIAN ZHOU, Wayne State University — We have fabricated graphene nanoribbon Field-effect transistors from high-quality graphene nanoribbons produced by sonicating multi-wall carbon nanotubes in an organic solvent. To minimize the influence of the underlying substrate, individual nanoribbons in the devices were suspended by removing the underneath silicon oxide using a wet etching method. Subsequently, in situ current annealing was carried out in high vacuum to further reduce the impurities adsorbed to the ribbon surfaces. The electrical transport properties of the devices were measured for a wide range of temperatures, revealing a range of unusual phenomena pertinent to the competing effects of improved overall charge homogeneity and reduced charge puddle sizes when the graphene nanoribbons are tuned close to the Dirac point. The electrical transport results on suspended graphene nanoribbon with varying disorder will be presented and discussed.

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