Abstract Submitted
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**Polymer electrolyte enhanced performance in graphene nanoribbon field-effect transistors**[1] CHENG LING, MING-WEI LIN, YIYANG ZHANG, XUEBIN TAN, MARK MING-CHENG CHENG, ZHIXIAN ZHOU, Wayne State University — Graphene nanoribbon Field-effect transistors were fabricated from unzipped multiwall carbon nanotubes on Si/SiO2 substrate by standard electron beam lithography and metal deposition. A small drop of polymer electrolyte consisting of poly(ethylene oxide) and lithium perchlorate was applied to the graphene nanoribbon devices. Electrical transport properties of the polymer electrolyte covered devices were measured using both the Si-back-gate and polymer-electrolyte-gate configurations. We observed dramatic increase of carrier mobility, significant reduction of the peak-width of the resistance as a function of the back-gate voltage, and the shift of the charge neutrality point toward zero gate-voltage in polymer electrolyte covered graphene nanoribbon devices. These experimental results will be presented and discussed in the context of ionic and dielectric screening of charged impurities on or near the graphene nanoribbons.

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