

Abstract Submitted  
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**Electronic Properties of Graphene Oxide**<sup>1</sup> GEUNSIK LEE, KYEONGJAE CHO, Department of Physics, UT Dallas, TX 75080 — Graphene has shown promising electronic properties as future device applications beyond the current CMOS (complimentary metal-oxide-semiconductor) technology based on silicon microelectronics. As a critical insulating component in all-carbon nanoelectronic devices, graphene oxides (GOs) are shown to have insulating behavior, but their electronic and atomic structures are poorly understood. We investigated electrical property of GO using density functional theory (DFT) and non-equilibrium Green's function (NEGF) method with tight binding (TB) scheme. We model the basal plane oxidation with top site (OH) and bridge site (epoxide) chemisorptions. By varying the chemisorption ratio of the hydroxyls and epoxides as well as their coverage, the conductance of GO is calculated and quantitatively compared with experimental reports. We have investigated the electronic structure of graphene and GO multilayers for pseudospin device application.

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Geunsik Lee  
Department of Physics, UT Dallas, TX 75080

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