Abstract Submitted
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Microstructure and Transport Studies of Functionalized Graphene[1] RON GAMBLE, DARRYL LEWIS, NC A&T State University, DEREJE SEIFU, Morgan State University, JORGE CAMACHO, MYRON STRONGIN, Brookhaven National Laboratory, LIYUAN ZHANG, Brookkaven National Laboratory — The microstructure and transport studies of fuctionalized graphene are reported. These studies reveal that the minimum conductivity is sample dependent and within the range (2-12)e^2/h independent of gate voltage. The variation of the minimum conductivity is attributed to sample impurities, apparent in Atomic Force Microscopy and Raman Spectroscopy. The Raman peaks are in general consistent with graphene, but show shifts in the G and 2D peaks. These shifts are associated with strain and doping. The dependence of the current (I) on the bias voltage (V_{SD}) is linear for most samples. The current dependence on gate voltage (V_g)curves show asymmetric behavior, showing the imbalance between the hole and electron carriers. A 16 A deposition of Fe leads to a significant modification in the transport properties due mostly the formation of iron oxide. The AFM clearly shows the formation of Fe clusters.

[1]DOE/NSF Faculty-Student Teams Program

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