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In Situ Study of Fluorine-Functionalized and Tri-Methyl Aluminum Dosed Epitaxial Graphene on SiC(0001) ZACHARY ROBINSON, VIRGINIA WHEELER, SANDRA HERNANDEZ, GLENN JERNIGAN, RACHAEL MYERS-WARD, D. KURT GASKILL, U.S. Naval Research Laboratory, TYLER MOWL, ENG WEN ONG, CARL VENTRICE JR., SUNY Polytechnic Institute, HEIKE GEISLER, SUNY College at Oneonta, IVO PLETIKOSIC, TONICA VALLA, Brookhaven National Laboratory, CHIP EDDY JR., U.S. Naval Research Laboratory — Graphene growth in Ar on SiC(0001) results in a single rotational orientation film with single-layer thickness control. For many electronic applications, a gate dielectric, such as Al2O3, must be deposited on top of the graphene. To facilitate this, an atomic layer deposition process was developed to deposit Al2O3 on a fluorine-functionalized graphene surface [1]. The functionalization process was necessary for deposition of the Al2O3. Angle resolved photoelectron spectroscopy and low energy electron diffraction were used to study the functionalized surfaces of bilayer and single layer graphene grown on SiC(0001). It was found that the fluorine had a negligible effect on the electronic structure of the graphene, and upon thermal desorption, caused no damage to the graphene film. Additionally, tri-methyl aluminum was dosed on the graphene in a chamber equipped with in situ XPS. This was performed on both fluorine functionalized and as-grown single layer graphene. 1 - Wheeler, Virginia, et al. Carbon, 50(6), 2307-2314

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