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**Metal Oxide Growth, Characterization and Spin Precession Measurements in CVD Graphene** AKITOMO MATSUBAYASHI, WESTLY NOLTING, DHIRAJ PRASAD SINHA, AVYAYA JAYANTHINARASIMHAM, JI UNG LEE, VINCENT LABELLA, University at Albany, State University of New York — Thin metal oxide layers deposited on graphene can be utilized as dielectric barriers between metals and graphene to help isolate a metal contact from the graphene channel. This is important for graphene based spintronic devices as dielectric layers between the ferromagnetic electrode and graphene have been shown to increase the spin relaxation time measured utilizing non-local detection and spin precession measurements by avoiding the conductivity mismatch problem. However, simply depositing metal oxide layers such as aluminum oxide on graphene results in non-uniform film lowering the quality of the interface barrier. We will present a systematic study of aluminum oxide layers grown on CVD (chemical vapor deposition) graphene under ultra-high vacuum conditions with and without titanium seed layers. The aluminum oxide layers with the 0.2 nm titanium seed layers showed reduced surface roughness. The chemical and structural composition determined by XPS (X-ray photoelectron spectroscopy) will be also presented that shows full oxidation of the aluminum and partial oxidation of the titanium. The results on the I-V and spin precession measurements in CVD graphene will be also presented.

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