

Abstract Submitted  
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**Local density of states measurements via STM and TS on clean fresh cleaved HOPG and Gold thin films on HOPG under ambient conditions.**<sup>1</sup> CASEY MOREAN, ROMAN MARIJCZUK, INDRAJITH SENEVIRATHNE, Lock Haven University — Highly Oriented Pyrolytic Graphite (HOPG) has many applications in physics and engineering thus understanding affiliated physical and chemical phenomena is important. This also makes HOPG an important and interesting system to study. This is an investigation of surfaces of HOPG and Au thin films (ranging about 20nm) via Scanning Tunneling Microscopy (STM) and Tunneling Spectroscopy (TS) with a Pt-Ir tip equipped Nanosurf Naio STM. In this investigation, clean fresh cleaved HOPG substrates were used. Surfaces of HOPG and Au sputter deposited at different film thicknesses were imaged via constant current mode to assess the surface consistency and roughness. Consistent atomic resolution images were obtained. The systems were then investigated via TS by applied tip voltage (V) vs. tunneling current (I) curves. These spectroscopic data were then used to assess the local density of states (LDOS) and the surface variation of LDOS. The discussion will attempt to assess the surface electronic environment of these systems in relation to the Au deposition and variation of Au thicknesses on HOPG. Since measurements were carried out in ambient conditions this adds to the complexity which will also be discussed.

<sup>1</sup>Lock Haven University Nanotechnology Program

Casey Morean  
Lock Haven University

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