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Carbon growth on noble metal films JOSEPH WOFFORD, OSCAR DUBON, Department of Materials Science & Engineering, University of California and Lawrence Berkeley National Laboratory, Berkeley, CA 94720 — Noble metals offer an attractive combination of properties as substrates for graphene growth, including low carbon solubility and minimal environmental reactivity. Regardless of noble metal commonalities, both experimental and *ab initio* results show significant variations in their structural relationship with epitaxial graphene films, including carbon-metal bond lengths and the orientation of carbon films relative to the substrate [Giovannetti, *et al.*, PRL **101**, 026803 (2008); Loginova, *et al.*, New J. Phys. **11**, 063046 (2009)]. Despite the possible richness of this experimental landscape, insufficient experimental work has been done to ascertain any systematic trends in the dependence of carbon film structure on surface chemistry. In this work we report on the form and properties of carbon deposited on noble metals under UHV conditions. Carbon morphologies on gold are found which grow both up and down the step edge gradient, suggesting a dendritic precipitation mode from the adatom gas on the surface of the substrate.

Joseph Wofford
Department of Materials Science & Engineering, University of California
and Lawrence Berkeley National Laboratory, Berkeley, CA 94720

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