

Abstract Submitted  
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**Growth of Graphene on Metal Substrates**<sup>1</sup> TRAVIS MILLER, Grove City College, JAYEETA LAHIRI, RAFIK ADDOU, MATTHIAS BATZILL, University of South Florida — Graphene, a single layer of graphite, has large potential as an electronic material. For these applications large scale, high quality graphene wafers are required. A promising approach to achieve this is by growth on metal substrates. In this REU project I used Auger electron spectroscopy to study the growth of graphene on Ni(111) and its modification by Cu or Al additions. On pure nickel we found two graphene growth regimes. Below 480 °C graphene grows by converting a surface carbide phase while above 480 °C graphene grows on pure nickel. Addition of copper destabilizes the nickel carbide enabling the growth of graphene in the absence of a carbide at lower temperatures. Finally, aluminum intercalation through the Ni- supported graphene layer was investigated in an attempt to form an ordered Ni-Al alloy underneath the graphene. Surprisingly, we found that this intercalation process already occurs at only 100 °C. Furthermore, the intercalated Al is protected by the graphene against oxidation.

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