Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Modification of graphene chemistry for metal nanoparticle growth: the effect of substrate selection ANNA ZANIEWSKI, ROBERT NEMANICH, Arizona State University — Graphene and metal nanoparticle composites are a promising class of materials with unique electronic, optical, and chemical properties. In this work, graphene is used as a reducing surface to grow metal nanoparticles out of solution-based metal precursors. The nanoparticle formation is found to strongly depend upon the graphene substrate selection. The studied substrates include silicon oxide, silicon, lithium niobate, and copper. Our results indicate that the chemical properties of graphene depend upon this selection. For example, for the same reaction times and concentration, the reduction of gold chloride to gold nanoparticles on graphene/lithium niobate results in 3% nanoparticle coverage compared to 20% coverage on graphene/silicon and 60% on graphene/copper. This work is supported through the National Science Foundation under Grant # DMR-1206935 .

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Date submitted: 15 Nov 2013 Electronic form version 1.4