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Characterization of Vapor Deposited Antimony Nanoparticles on HOPG and MoS_2 by Scanning Force Microscopy J. LONDA, C. CARAGIANIS-BROADBRIDGE, J. LEHMAN, A. LEHMAN, Southern Connecticut State University, K. RADEMANN, B. STEGEMANN, Humboldt University Berlin, C. RITTER, U.D. SCHWARZ, Yale University — Atoms or clusters deposited from the gas phase onto a substrate surface provide a suitable model system to study the early stages of material growth. In particular, diffusion, aggregation, and coalescence have been recognized to determine the morphology of the emerging nanoparticles. We present an analysis of antimony nanoparticles spontaneously formed from thermally evaporated monodisperse Sb_4 clusters on the (0001) basal planes of highly ordered pyrolytic graphite (HOPG) and molybdenum disulfide (MoS_2). The spontaneous formation of the antimony nanoparticles on the substrate surfaces is controlled by the deposition conditions (i.e., coverage and flux) at room temperature under ultrahigh vacuum conditions. After deposition the samples were transferred to air for further analysis. Scanning electron microscopy (SEM) was used as an alternate means for the qualitative evaluation of the surface morphology, whereas scanning force microscopy (SFM) has been employed for disclosing detailed information on the three-dimensional shape of the antimony nanoparticles.

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