

Abstract Submitted
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Nanoparticle shape instability by Coulomb interactions¹ NATALYA ZIMBOVSKAYA, University of Puerto Rico-Humacao — Metal atoms adsorbed on few-layer graphenes condense to form nanometer-size droplets whose growth in size is limited by a competition between the surface tension and repulsive electrostatic interactions from charge transfer between the metal droplet and the graphene. Under certain conditions a growing droplet can be unstable to a family of shape instabilities. This phenomenon was observed for Yb deposited and annealed on few-layer graphenes. A theoretical model to describe it is developed. The model describes the onset of shape instabilities for nanoparticles where their growth is limited by a generic repulsive potential and provides a good account of the experimentally observed structures for Yb on graphene [1].

[1] L. A. Somers, N. A. Zimbovskaya, A. T. Johnson, and E. J. Mele, PhPhys. Rev B 82, 115430 (2010).

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