

Übungen zur Oberflächenphysik 9

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- 1) If material A is grown on substrate B (a) in Frank-van der Merwe mode, (b) in Vollmer-Weber mode, what will be the growth mode of film B on substrate A in each case? Consider the various relations between surface and interface energies.
- 2) The activation energy of surface self-diffusion for a clean Ag(111) surface, 100 meV, is doubled by the presence of a Sb surfactant. Estimate how the saturation Ag island density will be changed at room temperature. Assume the critical island size is $i = 1$.
- 3) An Arrhenius plot of saturation island density, measured for Ag growth on a Pt(111) surface, shows two regimes with slopes of 56 and 122 meV for critical islands $i = 1$ and $i = 2$ respectively [1]. Calculate the Ag-Ag dimer bond energy and migration energy for Ag on Pt(111).

[1] H. Brune, G.S. Bales, J. Jacobsen, C. Boragno, and K. Kern: *Measuring Surface Diffusion from Nucleation Island Density*. Phys. Rev. B **60**, 5991 (1999)