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Modeling of the Kinetics of Metal Film Growth on 5-Fold Surfaces of Icosohedral Quasicrystals J.W. EVANS, B. UNAL, V. FOURNEE, C. GHOSH, D.-J. LIU, C.J. JENKS, P.A. THIEL, Iowa State University — During submonolayer deposition of metals on 5-f icosohedral Al- Pd-Mn and Al-Cu-Fe surfaces, experimental evidence for several system points to heterogeneous nucleation of islands at specific "dark star" trap sites. We model this phenomenon using a mean-field rate equation formulation for Ag on Al-Pd-Mn, where data is available for both the flux and temperature dependence of the island density. We also utilize a more sophisticated kinetic Monte Carlo simulation approach to analyze an atomistic lattice-gas model (for an appropriate "disordered-bond-network" of nearest-neighbor adsorption sites) describing nucleation of starfish islands observed by STM for Al on Al-Cu-Fe. Finally, we briefly describe multilayer growth morphologies (which can display kinetic roughening or quantum size effects), but which also generally reflect the submonolayer island distribution. B. Unal et al. PRB 75 (2007); C. Ghosh et al. Phil. Mag. 86 (2006) 831; Surf. Sci. 600 (2006) 1110; V. Fournee et al. PRL 95 (2005) 155504.

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