

[V-2]

## Homoepitaxial Growth on Ni(110) Surface

S.-J. Kahng, B.-Y. Choi, J. Lee, J.-Y. Park, and Y. Kuk

National Creative Research Initiative, Center for Sciences in Nanometer Scale, ISRC and Department of Physics, Seoul National University, Seoul, 151-742, Korea

Kinetic behaviors of homoepitaxial growth on Ni(110) surface was studied at the growth-temperature ranges 290~380 K with scanning tunneling microscopy. At low temperature (~290 K), deposited Ni grows layer-by-layer mode in the first several layers with one-dimensional islands but eventually (at > 10 monolayers) forms three-dimensional islands through the kinetic shortening of the average length of one-dimensional islands. At the intermediate temperature (~340 K), the three-dimensional islands were observed to be i) regular mesa-like structure with high aspect ratio (~1 : 10) at ~15 monolayer, ii) hut-like structure with low aspect ratio (~1 : 1.5) at ~35 monolayer, and iii) rounded mound structure at ~55 monolayers, due to the competition of kinetic and energetic terms. At the high temperature (~380 K), the flat surface with layer-by-layer mode was observed up to 50 monolayers. Microscopic origins for the observations will be discussed on the basis of kinetic Monte Carlo simulations.