Cu Island Growth on Cu(110)

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Submonolayer deposition of a metal upon itself can be used to study the properties of surface diffusion. Imaging techniques, such as STM, have the enormous advantage of being able to determine island shapes, but are inconvenient to employ for reliable statistical information about size distributions. STM methods will usually fail because of obstruction when the time evolution during deposition is sought, for comparison with most theories of heteroepitaxy.

Diffraction methods are better suited to the problem, and x-ray diffraction is ideal so long as there is sufficient signal. Satellite diffraction peaks are observed, whose shape is related, through a simple transformation, to the island size and spacing distributions. Here we present results for Cu/Cu(110) for which the temperature-, time- and rate-dependencies of the resulting distributions have been examined on beamline X16A at NSLS.

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