# Formation of Ag islands on Ag(111) using AFM in the dynamic mode

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Ag vacancy and adatom islands on Ag(111) have been frequently regarded as a test system to study the growth and dynamics of 2D-nanostructures [1]. Conventionally, such structures are created by argon ion bombardment and subsequent heating. However, in this study we utilized atomic force microscopy in the dynamic mode to create vacancy and adatom islands on flat Ag(111) terraces. Their formation occurs when the tip enters the repulsive interaction regime either during scanning (see Fig. 1) or by means of $\Delta f(z)$ curves. Non-invasive stable imaging of the resulting structures is possible in the non-contact attractive regime of the dynamic mode AFM as well as in the STM mode utilizing the same cantilever without excited oscillation. The application of local force and current spectroscopy enables to examine the creation mechanism in more detail. The influences of external parameters like the applied repulsive force and the oscillation amplitude on the island size will be discussed.

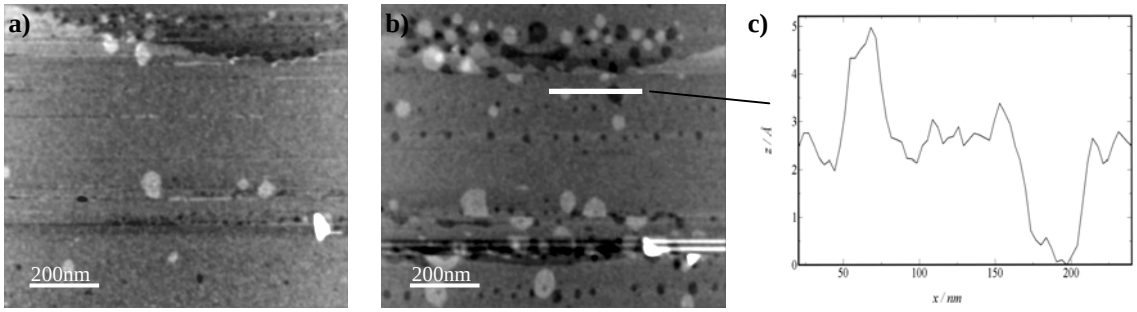


Fig. 1: a) first scan and island formation while scanning in the dynamic mode AFM, $\Delta f$ = -3Hz, $U_{bias}$ = -4V, b) consecutive scan of the same area and imaging of islands thus created before, same parameters as in a), c) line profile of a monatomic vacancy and adatom island pair

[1] K. Morgenstern et al., Phys. Rev. B **63**, 045412 (2001)