**An AFM and Cyclic Voltammetric Study of the Oxidation of Ni(111), Ni(110) and Ni(100)**

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The oxidation of Ni(100), Ni(111) and Ni(110) in alkaline electrolytes has been studied with the techniques of atomic force microscopy (AFM) and cyclic voltammetry. Cyclic voltammetry is used to characterise the formation of the oxide on these single crystalline faces and the redox behaviour of the oxide during oxidation to the nickel oxyhydroxide. Differences between the cyclic voltammetric profiles of the single crystals are noted and discussed. AFM is used to characterise the topography of the nickel surface in alkaline electrolytes (figure 1) and to study the potential dependent oxidation of the nickel hydroxide following potential excursions to the region in which it is oxidised to nickel oxyhydroxide. The contraction of the film forming nickel oxyhydroxide is compared to the results from the polycrystalline surface. AFM is also used to study kinetic effects associated with insertion and expulsion of ions which accompanies the contraction and expansion of the oxide phase during oxidation and reduction respectively.

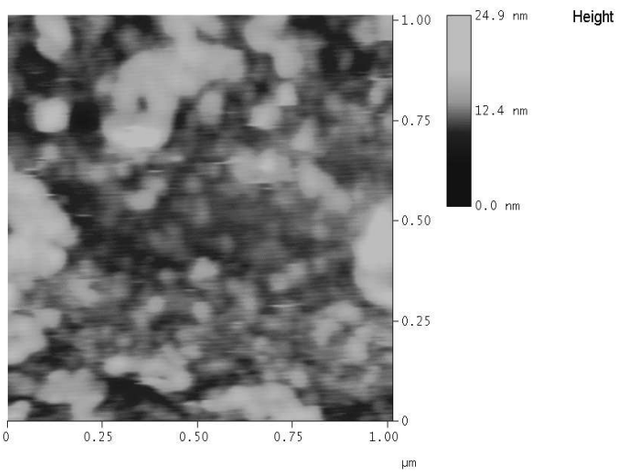


Figure 1
An in-situ AFM image of nickel hydroxide covered Ni(111) in 1 M KOH.

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