

Abstract Submitted
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A New Phase of the Au(111) Surface in Electrolyte Revealed by STM and Asymmetric Potential Pulse Perturbation.¹ YUFAN HE, ERIC BORGUET — Asymmetric potential pulse perturbations were combined with STM to separately the $(22\times\sqrt{3}) \leftrightarrow (1\times 1)$ phase transition from the dynamics of the dynamics of nanoscale island growth and dissolution at Au(111)/0.1M HClO₄ interfaces. In the course of these experiments a new surface phase, characterized by a gas of highly mobile Au adatoms on the surface, the absence of islands and a paucity of reconstruction stripes, was observed. This phase coexists with a low density of reconstructed stripes in “holes”. This new phase is an intermediate state and can only be observed over a potential range range from $0.3 V_{SCE}$ to $0.45V_{SCE}$, after a potential pulse lifting the reconstruction. In addition, and contrary to previous reports, the $(1\times 1) \diamond (22\times\sqrt{3})$ reconstruction process can be fast.

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