

Abstract Submitted
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Transition between two patterns on an Au-deposited Si(111) surface¹ F.K. MEN, A.L. CHIN, C.P. CHANG, Department of Physics, National Chung Cheng University, Chia-Yi 621, Taiwan, — Two distinct patterns have been observed by depositing sub-monolayer Au onto a Si(111)-(7×7) surface with a small miscut angle. Upon depositing Au at 600 °C, we find that a stripe of (5×2) reconstruction forms at the upper step edge in every terrace. For 700 °C deposition, one entire terrace out of several terraces transforms into the (5×2) reconstruction while the other terraces are totally unaffected by the Au deposition. The relative population between the (5×2) and the (7×7) terrace is governed by the amount of deposited Au. After annealing at a temperature above 700 °C the striped (5×2) pattern transforms into the (5×2)-terrace pattern. The similarity between this 'coarsening' of (5×2) reconstruction and the Ostwald ripening of clusters is striking and will be discussed. One application using the (5×2) pattern as a template to grow nanostructure in designated regions will be demonstrated.

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