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Formation of $\sqrt{3}\times\sqrt{3}$ structure by depositing Si on Si(111)-(5×2)/Au[1] F.-K. MEN, A.-L. CHIN, C.-F. JAN, J.-L. GUO, Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan, R.O.C. — By depositing Au on a Si(111) surface at an elevated temperature, 5×2, $\sqrt{3}\times\sqrt{3}$, and 6×6 reconstructions emerge successively as the Au coverage increases. Though great efforts have been made to identify atomic models for each reconstruction, satisfactory result is still lacking. By depositing Si on a 5×2 surface, we have identified the formation of the $\sqrt{3}\times\sqrt{3}$ structure even there was no additional Au being deposited. This observation leads us to speculate (i) the $\sqrt{3}\times\sqrt{3}$ structure has a higher Si density than that of the 5×2 structure, and (ii) the Au density in a single-domain $\sqrt{3}\times\sqrt{3}$ structure, i.e., no domain walls, is roughly equal to that in the 5×2 structure.

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