
S-07

Origin of transformation between saw-tooth-like facet and smoothly-bending facet on Si(5 5 12)-2x1

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From the STM image of reconstructed Si(5 5 12), a well-defined facet, not existing between (001) and (111), has been found in addition to the well-known (113) facet. With the help of known dimensions of (113) and (5 5 12), it has been identified as (6 9 17) facet through analyzing STM images and its corresponding bulk-terminated model. The (6 9 17) facet turns out to be composed of (3 3 7) and (0 2 2) elements with the area ratio of 4 : 3. Through forming an anisotropic triangle composed of (5 5 12), (1 1 3) and (6 9 17) in the stereogram, it becomes possible to understand the origin of two kinds of facet-shapes existing on Si(5 5 12)-2x1. Those are a saw-tooth-like facet and a smoothly-bending facet depending upon the local orientations inside and outside the anisotropic triangle in the stereogram, respectively.