

【S-08】

Si(5 5 12)에 존재하는 안정된 Si(6 9 17) Facet의 구조

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Up to now it has been known that the stable facet parallel to the atomic row of Si(5 5 12) is Si(113). In the recent structural studies on Si(5 5 12) using STM, it has been found that there exists another stable facet, Si(6 9 17), whose azimuthal angle is 97 degree-off from the atomic row and polar angle is 6.2 degree-off from Si(5 5 12). As this (6 9 17) facet appears in every inclined direction, it is not simply due to miscutting. The Si(6 9 17) facet consist of 1.92 nm wide (337) terraces and single (011) steps, of 0.195 nm height, connecting such narrow (337) terraces. The unit cell of (6 9 17) contains a pair of tetramers and π -7 chain which is quite similar to those of (337) subsections in Si(5 5 12). As the (6 9 17) facet is always accompanied by defects like grain boundaries, it can adapt smoothly-bending facets as well as straight facets. It can be concluded that it is essential to form such flexible (6 9 17) facets in combination with straight (113) facets in order to relieve the local strain with quite various directions.

