

The scanning tunneling microscopy is used to study the morphology of Tl adlayer in various stages of Tl desorption from the Si(111) surface and to study behaviour of various adsorbates on the Si(111)/Tl-(1 × 1). The utilization of thallium layer for passivation of the Si(111) was examined closely for various adsorbates. Manganese, aluminium, indium and tin layers which were directly deposited onto the Si(111)-(7 × 7) were compared with the layers prepared by deposition of adsorbate onto the passivating layer after the subsequent thermal desorption of Tl (after annealing at  $\approx 400^\circ\text{C}$ ). Examined adsorbates exhibited signs of extremely high diffusivity and weak bond with the surface Si(111)/Tl-(1 × 1). The passivating layer was stable against the adsorbates. The application of thallium in the role of surfactant caused lowering of temperature and coverage needed for the preparation of reconstructions which were observed on the surfaces prepared by the direct deposition of adsorbate.