

# Metal nanostructures on A<sub>III</sub>B<sub>V</sub> semiconductors investigated with scanning force microscopy

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Nanostructures formed during submonolayer deposition of gold on clean  $c(8 \times 2)$  InSb(001) surface in ultra-high vacuum (UHV) has been investigated with dynamic force microscopy (DFM) and Kelvin probe force microscopy (KPFM). Gold structures grow predominantly in the form of rectangular islands with edges oriented along  $\langle 110 \rangle$  and  $\langle 1-10 \rangle$  directions and their average size is dependent on evaporated temperature. Upon annealing the islands preserve their initial rectangular shape but their average size almost double, and the material accumulated previously in the substrate troughs disappear. Kelvin Probe Force Microscopy has shown that the chemical composition of the islands is different from the homogeneous substrate. In addition, the change of the low energy electron diffraction (LEED) pattern from  $c(8 \times 2)$  to  $c(4 \times 4)$  strongly suggests conversion of the substrate surface between the islands from In-rich to Sb-rich most likely due to alloying of the surface indium with gold in the islands.

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