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The decoration of vicinal copper polycrystalline surfaces by Antimony

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<p>Most properties of polycrystalline materials are controlled by the structure and interfaces they possess – e.g., grain boundaries. When a Cu surface is alloyed with antimony, the Sb atoms appear to diffuse to the growth surface and continuing to act as a surfactant throughout the growth process. Copper alloys are important commercial materials, which are often used at temperatures where segregation and diffusion processes has a huge influence on their properties. An important characteristic of these alloys is that segregation of one component to the alloy surface causes the surface composition to differ significantly from the bulk composition. This study utilizes an ultrahigh vaccum Variable temperature Scanning Tunneling Microscopy (UHV-VTSTM) and Low-Energy Electron Diffraction-Auger Electron Spectroscopy (LEED-AES) to determine the segregation and dissolution temperatures of Sb on Cu polycrystals and the growth mechanism. The VT-STM images of the Cu surfaces showed localization of Sb atoms in the vicinity of the step edges. The STM data showed that alloying initially occurred at the monatomic steps and a homogeneously spread Cu-Sb surface alloy was formed by the migration of Sb atoms.

Level (Hons, MSc,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

Yes

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

No

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