

Abstract Submitted
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Temperature Gradient Induced Movement of Liquid Alloy Droplets in Au on Ge(110)¹ BRET STENGER, ALEX DORSETT, JAMES MILLER, ERIN RUSSELL, CHRISTOPHER GABRIS, SHIRLEY CHIANG, Univ of California - Davis, CHIANG RESEARCH GROUP TEAM — The growth of Au on Ge(110) was observed with Low Energy Electron Microscopy (LEEM). The objectives of this study were to control the growth of low-dimensional nanostructures and understand the temperature induced motion of islands. Ge(110) was dosed with 0.5-5 ML of Au and heated to 850C. During deposition, islands grew to 1-2 microns in width and 2-5 microns in length, all oriented along the (1,-1,0) direction. The larger islands began moving with speeds of 0.1-1.0 microns/s, absorbing smaller stationary islands upon collision and increasing in size up to 60 microns in width and 100 microns in length. This movement can be explained by a temperature gradient across the sample causing a Ge concentration gradient across the islands, inducing movement in the direction of increasing temperature. Optical microscopy confirmed that the large islands moved from the cooler edges of the sample toward the hotter center of the sample. As the temperature decreased, the island behavior was also studied and revealed rapid island contractions which left traces on the Ge(110) surface. Low Energy Electron Diffraction (LEED) showed a (4x1) reconstruction below 400C, a (4x4) reconstruction between 400C and 500C, and a (2x1) reconstruction above 500C.

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