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The Phases of Ag on Ge(111): A Low Energy Electron Microscopy Investigation. JASON GIACOMO, SHIRLEY CHIANG, University of California, Davis — The phases of Ag on Ge(111) have been investigated with Low Energy Electron Microscopy (LEEM). We have studied the growth of the well known (4x4) and ($\sqrt{3}$x$\sqrt{3}$)R30^o phases of Ag. LEEM images show the (4x4) phase grows on the surface with a high dependency on surface steps. The ($\sqrt{3}$x$\sqrt{3}$)R30^o phase then grows as the Ag concentration increases with little dependence on the steps. These features are explained by the diffusivity of Ag on the surface. LEEM has also been used to study the phase transitions at the Ag desorption temperature. Video rate data shows an interesting phase transition as small domains of Ag abruptly change from the ($\sqrt{3}$x$\sqrt{3}$)R30^o to the (4x4) phase and then from the (4x4) to a disordered 2D gas phase. Although the disordered phase shows no contrast in the LEEM images we know it exists because as the sample is cooled down the remaining Ag on the surface condenses back into the (4x4) and ($\sqrt{3}$x$\sqrt{3}$)R30^o phases depending on how much Ag has desorbed.

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