

Abstract Submitted
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Growth of Iridium on Ge(111) Studied by STM and LEEM CORY MULLET, SHIRLEY CHIANG, JAMES MORAD, ALICE DURAND, University of California, Davis — Iridium on germanium is a system which is useful for understanding the interaction of 5d metals with semiconductors, with potential applications to electronic contacts. We have used both scanning tunneling microscopy (STM) and low energy electron microscopy (LEEM) to characterize the submonolayer growth of iridium onto Ge(111) as a function of coverage, deposition temperature, and annealing temperature. Ir deposited onto the Ge(111) c(2x8) surface forms a $(\sqrt{3}\times\sqrt{3})R30^\circ$ phase with the island size dependent upon substrate temperature during deposition. Deposition at a sample temperature of 670 C yields large micron-sized regions of continuous $(\sqrt{3}\times\sqrt{3})R30^\circ$ coverage, as seen by LEEM. Deposition at 400 C produces Ir islands of three different sizes, all of which are too small to be resolved in LEEM but can be easily observed in room temperature STM images: large islands of roughly 10 to 20 nm diameter, consisting of multiple layers; medium-sized islands of roughly 4 nm in diameter, and small islands about 1 nm in diameter. Heating the sample over 640 C yields islands of large enough size to be resolved with LEEM, with the island size dependent upon annealing temperature. Ostwald ripening was observed in LEEM movies.

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