Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Nucleation, Structure, Morphology of Co on Ag(110): temperature dependent subsurface migration. PHILLIP SPRUNGER, INDRAJITH SENEVIRATHNE, Department of Physics and Astronomy, Louisiana State University , ORHAN KIZILKAYA, Center for Advanced Micro Structures and Devices - CAMD, Louisiana State University , RICHARD KURTZ, Department of Physics and Astronomy, Louisiana State University — STM, LEED and Auger spectroscopy have been used to study the nucleation, structure, and morphology of Co on Ag(110) as a function of both coverage and temperature. STM has shown that films grown at coverages of $\theta <$ 1ML and low substrate temperatures ($\sim$150K) give rise to segregation of Co to the subsurface layer. Furthermore it is possible to observe the nucleation of displaced Ag into small monatomic height islands on top of the substrate. For higher coverages of Co, θ $>$ 1ML a 3-D cluster growth mode takes place giving islands. These islands have a typical $\sim$20 Å diameter and the height of $\sim$3 Å. However, upon annealing the surface to $\sim$673K, profound changes are observed on the morphology of the surface. STM shows that there is a drastic reduction of the density and height of Co islands on the surface, presumably due to subsurface Co cluster growth. Further verification of this was obtained by sequential LEED and Auger spectra obtained while progressive annealing. It was observed the onset of this process occurs at $\sim$673K and flattens out at $\sim$873K. This work is funded by NSF NSF-DMR-0504654

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Date submitted: 21 Nov 2006 Electronic form version 1.4