

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Dewetting of Epitaxial Silver Film on Silicon by Thermal Annealing** CHARLOTTE E. SANDERS, The University of Texas, Department of Physics, GARY L. KELLOGG, Sandia National Laboratories, Nanoscale Sciences Department, C.-K. SHIH, The University of Texas, Department of Physics — It has been shown that noble metals can grow epitaxially on semiconducting and insulating substrates, despite being a non-wetting system: low temperature deposition followed by room temperature annealing leads to atomically flat film morphology. However, the resulting metastable films are vulnerable to dewetting, which has limited their utility for applications under ambient conditions. The physics of this dewetting is of great interest but little explored. We report on an investigation of the dewetting of epitaxial Ag(111) films on Si(111) and (100). Low energy electron microscopy (LEEM) shows intriguing evolution in film morphology and crystallinity, even at temperatures below 100°C. On the basis of these findings, we can begin to draw compelling inferences about film-substrate interaction and the kinetics of dewetting. Financial support is from NSF, DGE-0549417 and DMR-0906025. This work was performed, in part, at the Center for Integrated Nanotechnologies, User Facility operated for the U.S. DOE Office of Science. Sandia National Lab is managed and operated by Sandia Corp., a subsidiary of Lockheed Martin Corp., for the U.S. DOE's National Nuclear Security Administration under DE-AC04-94AL85000.

Charlotte E. Sanders  
The University of Texas, Department of Physics

Date submitted: 12 Nov 2012

Electronic form version 1.4