

Abstract Submitted  
for the DPP05 Meeting of  
The American Physical Society

**Development of a Substrate Handling System for ECR Thin Film Deposition**<sup>1</sup> THOMAS WEDLICK, The College of New Jersey, ANDREW POST-ZWICKER, Princeton Plasma Physics Laboratory — ECR plasma deposition imparts high particle fluxes, transpires at low pressures reducing contamination, has long mean free paths improving deposition precision, and has faster rates than RF deposition. ECR plasmas are typically both larger and denser than RF plasmas, which allow for greater substrate sizes. The ECR deposition system developed generates a copper-sputtering argon plasma with a 2.45GHz 5kW source. Initial plasma characterization is spectroscopic yielding argon and copper neutral and ion densities. SEM micrographs are used to determine deposition rates, thickness, and uniformity within the 6 in. diameter deposition zone. A precise (within 0.05 in.) substrate handling system, comprised of a Genmark elevator and robotic arm, transports the substrate from the loading chamber to the deposition chamber. Sufficient plasma control necessitates accurate argon flow and pressure control (to within  $10\mu\text{Torr}$ ). Details of the ECR deposition system, the substrate handling system, and the argon flow control will be presented.

<sup>1</sup>Supported by U.S. DOE through DE-AC02-76CH03073 and through the Science Undergraduate Laboratory Internship program.

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Date submitted: 25 Jul 2005

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