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ECR Plasma Deposition of Copper KELLY GREENLAND, Lock Haven University of Pennsylvania, ANDREW ZWICKER, Princeton Plasma Physics Laboratory — ECR plasma is used in processing due to its ability to produce stronger, denser, and more uniform plasma as opposed to other processing plasmas. Having a more controlled plasma makes it easier to prevent unintentional damage to the sample, by having fewer stray ions come in from undesired angles. Samples were sputtered on silicon wafers at various pressures, powers, and sample distances from the plasma, and then analyzed with a scanning electron microscope to determine the thickness, uniformity and contamination. A typical plasma's parameters would have a microwave power of 2500watts, a target bias of 125volts, and an argon pressure of 0.46mtorr. An optical spectrometer was utilized to measure impurity content within the chamber. In addition, two-line spectroscopy was performed to measure electron temperature in lieu of a Langmuir probe. These initial measurements allow one to undertake more advanced projects on this apparatus, as well as refine the measurements of electron temperature through additional resources or statistical calculations and acquire more precise values with less uncertainty by acquiring apparatus that is able to be more finely calibrated.

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