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Measurements of material induced chemistry effects on low pressure planar ICP JOEL BRANDON, North Carolina State University, SANG KI NAM, Samsung Electronics Mechatronics Division, STEVEN SHANNON, North Carolina State University — It is well known in capacitively coupled radio frequency plasmas that the cathode is a significant source of secondary electrons. It is also known that the cathode material, by way of differing work functions and therefore differing secondary electron emission coefficients, can affect the defining characteristics of the surrounding plasma. PIC/MCC models have shown that the energy of secondary electrons is dependent on the material as well as the gas and that the material can have an impact on overall plasma density. A novel approach using a rotating axle, Langmuir probe, and laser diagnostics has been developed to quantify material induced changes in a steady state CW plasma. With this method, the authors intend to show a material induced contribution to the high-energy tail of the EEDF in noble gasses, and a material induced contribution to species populations in electronegative gasses. This approach would allow the authors to observe the effects of electron temperature, densities, and negative ion densities due to material changes in a single plasma environment without intermediate chamber evacuation or contamination.

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