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Spatially Resolved Oxygen Recombination Coefficients from Pulse Induced Fluorescence[1] KRISTOPHER FORD, JOEL BRANDON, North Carolina State University, SANG KI NAM, Samsung Electronics Co., STEVEN SHANNON, North Carolina State University — Surface recombination coefficients remain a key parameter for plasma chemistry models, particularly for reactive radical species that play important roles in surface processing. Pulse induced fluorescence, or PIF, is an affordable and easily implemented method for this measurement. Here, a fast-gated iCCD array is used to take radial images of a low pressure inductive plasma. The active surface is quartz, and wavelength filters select the 844 nm line of atomic oxygen and the 750 nm line of argon for actinometry analysis. The decay constant from PIF intensity data provides an apparent surface recombination coefficient as a function of radial position. Double decay constant behavior is observed, which compares well to previous work in microwave oxygen plasma over silica. The surface loss probability profile and trends resulting from gas flow/pressure changes will be presented. The associated implications for gas dynamics and modeling will also be discussed.

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