

Abstract Submitted  
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**Self-Consistent Simulations of the Radial Line Slot Antenna Plasma Source** PETER VENTZEK, Tokyo Electron America, ROCHAN UPADHYAY, Esgee Technologies Inc., MICHITAKA AITA, JUN YOSHIKAWA, TOSHIHIKO IWAO, KIYOTAKA ISHIBASHI, Tokyo Electron Ltd., LAXMINARAYAN RAJA, The University of Texas at Austin — The radial line slot antenna plasma source couples microwave power through a slot antenna structure and window to a plasma characterized by a generation zone adjacent to the window and a diffusion zone that contacts a substrate. The diffusion zone is characterized by a very low electron temperature. This property renders the source useful for soft etch applications and thin film processing for which low ion energy is desirable. The transport of electrons from the point of generation through the diffusion is characterized by a relaxing electron energy distribution function. The transport is difficult to describe using a quasi-neutral model and a zero dimensional solution of Boltzmann's Equation. A hybrid approach in which test particle electrons are used to describe the electron kinetics is demonstrated. The impact of driving frequency, metastable pooling on the spatial distribution of the electron energy distribution function will be described for argon plasmas.

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