

Abstract Submitted
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Simulations of the Plasma Structure of a Radial Line Slotted Antenna Plasma Source JUN YOSHIKAWA, Tokyo Electron Technology Development Institute — The Radial Line Slot Antenna (RLSA) 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. Another property of the diffusion zone is that the plasma density falls from the axis to the walls. Static magnetic fields at the walls of other plasma sources have been shown to impede electron losses to walls lowering their loss rate and changing the plasma profile. [1] In this presentation, the impact of different magnetic field configurations on the diffusion zone plasma structure will be described. To do this, an ambipolar-electromagnetic field model previously used to describe RLSA plasmas is modified to account for the impact of magnetic fields on transport coefficients and plasma chemistry. Resonant and other effects of magnetic field are also discussed.

[1] J. Vac. Sci. Technol. B12 470 1994.

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