

Abstract Submitted
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Numerical Simulations for ICP Source for Implant Applications

VLADIMIR KUDRIAVTSEV, BABAK ADIBI, TERRY BLUCK, Intevac, Santa Clara, CA, VLADIMIR KOLOBOV, CFDRC, Huntsville, Al — ICP Plasma source characteristics depend significantly on cavity aspect ratio and operating pressure [1]. In this work we investigate the effect of chamber height and antenna coil placement on current flux and plasma uniformity at pressures in 5mtorr – 1torr range and also study computationally appropriate scaling laws. Cavity dimensions are 0.2x0.2 m. CFD-ACE/Plasma software is used to conduct 2D planar plasma simulations for Ar and H₂ plasmas. Software allows use of unstructured and non-uniform mesh to resolve geometry details. At low pressure plasma peaks in the middle of the cavity even when RF antenna is placed on top. Results show that there is a maximum in plasma density that corresponds with a unique aspect ratio.

[1] C. Biloiu, et al., US Patent 8,590,485B2

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