

Abstract Submitted  
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**Modelling electronegative plasmas separated by an internal sheath** NICOLAS PLIHON, CORMAC S. CORR, PASCAL CHABERT, JEAN-LUC RAIMBAULT, Laboratoire de Physique et Technologie des Plasmas, Ecole Polytechnique, Palaiseau, ALLAN J. LICHTENBERG, Department of Electrical Engineering and Computer Science, University of California, Berkeley — It has experimentally been shown that in an ICP with an expanding chamber, adding a small concentration of SF<sub>6</sub> to argon can lead to the formation of a stationary double layer [1] separating two plasmas: a high density electropositive plasma in the source, and a low density, high electronegativity plasma downstream. This double layer periodically forms and propagates when increasing the the electronegativity [2]. We present calculation of the discharge equilibrium in the stationary double layer case based on a 1D description of the discharge. The source plasma appears to be only slightly affected by the downstream plasma. The particles densities downstream are set by the incoming flux of positive ions from the source and attachment occurring in the downstream volume. Our calculations show fairly good agreement to our experimental data.

[1] Plihon *et al.* 2005 *App. Phys. Lett* **86** 091501

[2] Plihon *et al.* 2005 *J. Appl. Phys.* to be published

Nicolas Plihon  
Laboratoire de Physique et Technologie des Plasmas  
Ecole Polytechnique, Palaiseau

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