

Abstract Submitted  
for the GEC10 Meeting of  
The American Physical Society

**Control of the plasma potential in strong electronegative plasmas and ion-ion plasmas** LARA POPELIER, ANE AANESLAND, PASCAL CHABERT, LPP, CNRS - Ecole Polytechnique — Extraction and acceleration of both positive and negative ions perpendicularly to a magnetic field from a strong electronegative plasma and from an ion-ion plasma is investigated in the PEGASES thruster, working with oxygen and SF<sub>6</sub>. The plasma is generated in a cylindrical quartz tube terminated by metallic endplates, where electrons are confined by a static magnetic field along the axis of the cylinder. The electron mobility along the field is high and the plasma potential can therefore be controlled by the bias applied to the endplates. Langmuir probe and RFEA measurements are done in the perpendicular direction, in which an ion-ion plasma may form as a result of electron confinement. The measured ion energy distributions show a single peak consistent with a linear increase of the plasma potential with the variation of the applied positive voltage on the end plates. When the endplates are biased negatively, the plasma potential always remains at or above 15 V. However a beam of negative ions is observed under certain conditions when the endplates are biased negatively.

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Date submitted: 11 Jun 2010

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