

Abstract Submitted
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Scaling of a miniaturized cylindrical Hall thruster¹ DANIEL KENNEDY, University of Kansas, YEVGENY RAITSES, Princeton Plasma Physics Laboratory — Electric propulsion provides a significantly higher specific impulse that allows mass reduction for spacecraft when used in lieu of chemical propulsion. For micro and nano satellite applications, plasma thrusters should not only be miniaturized in mass and geometry, but also capable of operating efficiently at very low power levels of a few watts or less. Research was conducted to determine theoretical limits and practical restrictions on materials and electrodes for miniaturization of cylindrical Hall thrusters [1,2]. Analysis of the scaling relationships for plasma properties and thruster performance were derived and the thruster design, including the magnetic circuit, will be presented.

[1] Y. Raitses and N. J. Fisch, Phys. Plasmas 8, 2579 (2001).

[2] A. Smirnov, Y. Raitses, and N.J. Fisch, Phys. Plasmas 14, 057106 (2007).

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