

Abstract Submitted
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Inductively Coupled Plasma with Ferromagnetic Core for Space Propulsion VALERY GODYAK, RF Plasma Consulting — Inductively Coupled Plasma, (ICP) enhanced with ferromagnetic core, (MFICP) has proven having many benefits comparing to conventional coreless ICPs [1]. Superior efficiency and spatial selectivity for rf power injection, ability to work at low rf frequency and longevity are main advantages of FMICP that are already utilized in lighting and plasma processing of materials. A comparison of two MFICP based embodiments for space propulsion (the ion thruster and the plasma cathode for ion beam neutralizing) with similar devices based on traditional ICP, Helicon and Microwave concepts is given in this presentation. It is shown that both FMICP based devices have superior plasma generation efficiency, simpler construction and more compact comparing to ion thrusters and plasma cathodes based on traditional concepts. Apart of efficiency and longevity FMICP has many others features beneficial for space propulsion that are discussed in this presentation. [1] V. A. Godyak, Ferromagnetic Enhanced Inductive Plasma Sources, J. Phys. D: Appl. Phys., 46, 283001, 2013.

Eric Barth
American Physical Society

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