

Abstract Submitted
for the GEC11 Meeting of
The American Physical Society

Numeric and experimental study of a microwave resonant cavity as a cathode for space propulsion LAURENT LIARD, YU ZHU, Laplace - Université Paul Sabatier, GERJAN HAGELAAR, Laplace - CNRS, GREPHE TEAM — Resonant microwave cavity as a plasma source has shown recently [1] some exciting experimental results, including dense electronic density and low plasma potential in a xenon plasma. Nevertheless, physical causes of these interesting properties are not totally understood. We present in this poster a microwave cavity designed in our laboratory for a 2.45 GHz resonance. The prototype is characterized by its S parameters and its plasma by Langmuir probes measurements. The cavity is also modeled by a 2-D fluid model named Cavimo [2], which couples plasma and microwave interaction. The matching system is discussed to optimize the plasma creation and select the excited microwave mode. By a parametric study (power, pressure, condition of electron extraction) performed at the same time on the code and the prototype, the physical causes of the particular properties of the plasma are discussed.

[1] K. Diamant IEEE Trans. On Plasma Sci. p1558 2009

[2] G. Hagelaar et al., J. Phys. D : Appl. Phys vol. 42 p194019 2009

Laurent Liard
Laplace - Université Paul Sabatier

Date submitted: 15 Jul 2011

Electronic form version 1.4