

Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Magnetization effect on secondary electron emission in a hollow cathode plasma source.¹ MONTU BHUVA, Institute for Plasma Research, HBNI, Bhat, Gandhinagar 382428, India. — The secondary electrons play a significant role in the sustenance of direct current discharges, as it contributes to a major fraction of the discharge current. The emission characteristics can be greatly influenced by choosing appropriate hollow cathode geometry and/or application of external magnetic field. In this paper, the effect of tangential/oblique magnetic field on the secondary electron emission from a cylindrical and conical hollow cathode surface has been experimentally studied and discussed. It is found that the sustenance voltage of the discharge tend to shift towards higher gas pressure as the magnetic field increases. Furthermore, the discharge transpires in to a collimated, elongated plasma column. The cathode fall thickness is visually seen to increase with the applied magnetic field. The observed phenomena have been qualitatively explained using a phenomenological model; which intrinsically takes in to account the variation in the secondary electron emission yield due to magnetic field.

¹HBNI- Homi Bhabha National Institute

Montu Bhuva
Institute for Plasma Research, India

Date submitted: 12 Jun 2018

Electronic form version 1.4