

Abstract Submitted
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The influence of conical and cylindrical hollow cathode geometries on the characteristics of a magnetized plasma column.¹ MONTU BHUVA, SHANTANU KARKARI, SUNIL KUMAR, Institute for Plasma Research, HBNI, Bhat, Gandhinagar 382428, India — The characteristics of a magnetized plasma column produced by direct-current (DC) operated hollow cathode plasma source is presented. It is found that by incorporating a conical hollow cathode geometry in the source, the downstream plasma column exhibits a centrally peaked density profile; as opposed to an off-centered density peak observed in case of a cylindrical cathode system. It is also found that owing to the improvement in secondary electron emission yield, the discharge in the case of a conical cathode can be sustained at twice the higher magnetic field than in the cylindrical case. A phenomenological model has been formulated to explain the discharge behavior for each plasma source. The plasma properties obtained from the experimental measurements and from the model has been qualitatively discussed and correlated with the source geometry.

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