

阴极有半圆柱形凹槽的非对称磁控管型H⁻-离子源的试验研究

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摘要 <正> 一、前言 国内唯一的一台标准磁控管型H⁻离子源已在1983年完成了桌上试验研究,达到了预期的指标。试验中发现,该源按弧功率估算应能引出更多的H⁻束流(>50mA),H⁻束流的引出除受该装置引出电压(<18kV)的限制外,阴极表面利用系数低也限制了H⁻束流的引出,为提高源的效率,引用了阴极-阳极引出狭缝形状聚焦技术,试制了一个带半圆

关键词 [非对称磁控管型H⁻离子源](#) [凹槽形阴极](#) [形状聚焦](#) [阴极表面利用系数](#)

分类号

AN EXPERIMENTAL STUDY ON ASYMMETRIC MAGNETRON H⁻- SOURCE WITH GROOVED CATHODE

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Abstract An asymmetric magnetron H⁻ source with grooved cathode is built to replace a standard-magnetron H⁻ source. This new cathode has a semi-cylindrical groove and its height is reduced so that the cathode-anode spacing in the back of the source increased from 1 mm to 3.6 mm. This leads to an improvement by a factor of three to four in reducing arc power, which depends on the utilization factor of the cathode area. In addition, arc starting was easier than the standard magnetron H⁻ source. Less influence of the arc current fluctuation and the deviation from the groove d cathode-anode extracting slit are observed. Also, it is shown that gas efficiency is improved in our source. A new discharge arc chamber and the experimental results on the desk test of this device are reported in detail.

Key words [Asymmetric magnetron H⁻ source](#) [Grooved cathode](#) [Geometry focus](#) [Utilization factor of cathode area](#)

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