

Entering into Space and New Energy and Propulsion Technology (7)
Entering into Space and New Energy and Propulsion Technology (2)

Author: Dr. yanhui jia

Lanzhou Institute of Physics, China, jiayh510@163.com

Dr. Ning GUO

Lanzhou Institute of Physics, China, guoningaa@163.com

Prof.Dr. tianping zhang

Lanzhou Institute of Physics, China, ztp510@aliyun.com

Mr. Wei Yang

China, 365955393@qq.com

Mr. Juntai Yang

Lanzhou Institute of Physics, Electric Propulsion Department, China, skybluevii@qq.com

Mr. Zhong Wang

Lanzhou Institute of Physics, China, wangzhong204@126.com

Dr. Jie Feng

Lanzhou Institute of Physics, China, jie_feng@163.com

THE STUDYING OF NEUTRALIZER CHARACTERIZATION OF MULTI-THROTTLING POINT ION ENGINE

Abstract

The 5kW power level multi-throttling ion engine was developed for all electric propulsion satellite in China, and its design life was more than 30,000 hours. The neutralizer cathode is a key component of ion engine for ion beam neutralizing. In order to ensure ion engine operated long lifetime, the neutralizer must be operated at spot mode. In this paper, the operation mode of the ion engine neutralizer was studied by experiment and analysis. Sensitive parameters were identified for affecting the spot mode of neutralizer, and the operating characterization of neutralizer at coupling with ion beam was compared to component at triode mode. At the last, margin parameters of propellant flow rate and keeper current were designed for ensure the long life time of ion engine.