SPACE PROPULSION SYMPOSIUM (C4)
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INVESTIGATION OF HOLLOW CATHODE DISCHARGE MODES TRANSITION CHARACTERISTICS

Abstract

The plasma discharge characteristics of hollow cathode were systematically studied via experiment in this paper, especially the transition of different discharge modes. During the experiment, the hollow cathode worked in triode configuration. The relevant discharge parameters were regulated, and then the discharge plasma characteristics, the transition between three different modes were analyzed in detail. The conclusions were acquired as follows: hollow cathode discharge has three distinct modes, namely plum mode, spot mode and diffuse mode. Each mode can be clearly distinguished from the variety of discharge current, discharge voltage and their oscillations. Furthermore, when regulating the discharge parameters, transition can be realized between the three modes.