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THE RESEARCH ON ADN BASED NON-TOXIC MICRO PROPULSION TECHNOLOGY FOR DEEP SPACE EXPLORATION CUBESATS

Abstract

Deep space exploration activities have been carried out for 50 years. Up to now, there are hundreds of deep space exploration missions, the success rate is only 50200mN ADN based non-toxic micro propulsion module technology is studied for cubesats in this paper. Total design of the micro propulsion module is completed. The 1U (100mm * 100mm * 100mm) module integrates four micro thruster components, the controldrive circuit, tank and other components, which can provide 850 N•s total impulse for, and can be achieved with the plug and play. The module supports expansion, to meet the needs of the 3U 12U cubesats. Research on 200mN ADN based non-toxic thruster is carried out. The numerical calculation based on 21 steps elementary reactions is carried out. The analysis of combustion products, pressure, temperature and other parameters of thruster performance is carried out. The ignition test is carried out in high vacuum environment, testing the performance parameters of the thruster. ADN based non toxic micro propulsion technology has the characteristics of high energy, low toxicity, pre-packaging, high thrust and so on. It can provide high speed increment for the cubesats, and realize the rapid deployment of the cubesats.