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CUBESAT-BASED TESTING TECHNIQUES FOR SPACE SUIT AND EQUIPMENT COMPONENTS

Abstract

Sending experiments into space has traditionally been a costly and complex endeavor, reserved only for large-scale missions. However, the emergence of CubeSat technology has opened up new opportunities for low-cost space experimentation. CubeSats provide a versatile platform for conducting scientific research in space, allowing for a variety of experiments to be carried out in a modular and customizable manner. Testing materials for use in space is critical for ensuring the safety and reliability of space missions, especially those involving human spaceflight. However, traditional testing methods can be expensive and time-consuming, making them impractical for smaller-scale space missions. CubeSats, with their small size and low cost, offer a potential solution for conducting material testing in space. In this abstract, we will explore various testing techniques that can be used to evaluate materials in the space environment, including thermal cycling, radiation exposure, and impact testing. The main part of this experiment will be touched upon, which is the use of a material in the astronauts' suit that is resistant to several problems that the astronauts face and to protect them from the dangers of their presence for long periods of time agitated by the earth's atmosphere at a relatively inexpensive cost. We will also discuss how CubeSats can be used to perform these tests and the advantages and limitations of this approach. Finally, we will examine some notable examples of CubeSat-based material testing missions and their contributions to the field of space science and technology.