IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)
Interactive Presentations - IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (IP)

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MICROGRAVITY ENVIRONMENT TEST FACILITIES IN KOREA

Abstract

South Korea performed a successful launch event in June 2022. Now, it is preparing for the next-generation launch vehicle development project. The next-generation launch vehicle is expected to have improved performance and mission compared to the Korean launch vehicle known as Nuri. It is necessary to understand and design the propulsion system in the space environment of the next-generation launch vehicle. A test in microgravity is required for verification, and a drop tower was built to conduct an effective experiment at a low cost. The microgravity environment test facility, a drop tower, was built in the Asan Green Tower in cooperation with the Korea Aerospace Research Institute and Asan City. In this paper, the tower configuration, capsule shape, and test facility environment are described. This test facility has a total height of 150m and a net drop height of 110m, and the microgravity environment realized is about 4.7s. In order to accurately drop and deceleration from a drop height of up to 100 meters, all configurations including the release device, capsule, and deceleration device were reviewed and applied. It is expected that research in various fields will be conducted through the microgravity test facilities.