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INCREMENTAL RESOURCES FOR SPACE MICROGRAVITY EXPERIMENTS BASED ON CHINA COMMERCIAL COMPANIES

Abstract

In China, it is almost the same way to get microgravity environments by building drop-tower, sub-orbit rockets and cooperating with overseas scientists to use their microgravity facilities. In 2006 and 2016, China launched two recoverable satellites named SJ-8 and SJ-10, on which tens of space microgravity programs were completed. As the accomplishment of the three-step strategy, China Space Station (CSS) was built, and it became another large-scale space microgravity lab for world-wide scientists. In particular, the United nations Office for Outer Space Affairs(UNOOSA), in cooperation with the China Manned Space Agency published the 1st "Announcement of Opportunity" under the UN/China cooperation on the Untilization of the CSS initiative, inviting all member states of the UN to submit applications for conducting their scientific experiments on board the CSS.

At the same time, supported by China government, the commercial space companies grow up rapidly in recent years. Especially, in 2023, scientists in Tsinghua University completed the satellite-based on-orbit printing of 3D tumor Models on the satellite of SPACETY as another scientific team tested the effects of antimicrobial materials in microgravity environment with DEAR-1 satellite owned by AZSPACE company, who are devoting himself to advanced microgravity platforms for all scientists. In 2024, AZSPACE will launch two satellites based on his own spacecraft platform named B300 which means their payload capacity will reach 300 kilograms for each satellite. The most challenging thing is that AZSPACE will try to recover the rear one with the re-entry techniques. In this report, we will introduce the characteristics and abilities of B300 platform and related key equipment developed by AZSPACE for microgravity experiments. It is worth mentioning that AZSPACE has proposed an Space Ferris Wheel (SFW) configuration to obtaining variable gravity environments in space, which will be the more proposing space project for microgravity science and interstellar travel.

In a word, microgravity or variable gravity is the most important for human study the space and live with it. Besides ISS and CSS, scientists or commercial organizations can do more with the resources by cooperating with China commercial space companies and so forth, the microgravity scientific activities will promote the qualities of commercial space platforms.