45th STUDENT CONFERENCE (E2)
Educational Pico and Nano Satellites (4)

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LATEST STATUS OF THE FOUR CHINESE CUBESATS IN THE QB50 PROJECT

Abstract

In 2011, the QB50 project of European Commission's Framework 7 research program was granted. The project was initiated by Von Karmon Institute of Technology. The primary object of the project is the measurements of the key parameters and constituents in the lower thermosphere. Now there are 36 CubeSats from twenty-one countries in the international project. Four Chinese universities in the mainland, Northwestern Polytechnical University (NPU, Asia coordinator), Harbin Institute of Technology(HIT), Nanjing University of Science and Technology (NUST), National University of Defense Technology (NUDT) join the QB50. Each of the universities built a 2U CubeSat. They are Aoxiang-1(NPU), LilacSat-1(HIT), NUDTSat(NUDT) (NUST) and NJUST-1. Among them, three CubeSats carry the Ion/Neutral Mass Spectrometer, which is used to resolve the major constituents in the lower thermosphere, i.e., O, O2, N2. NJUST-1 has a Flux--Probe Experiment science payload for the measurements of atomic and molecular oxygen densities. Besides, the lower thermosphere research, the four CubeSats will also carry some innovative experiments, which are high precision attitude control use compacted attitude control module, high reliable On-board computer test, high precision orbit determination by GPS/BDS receiver, amateur radio communication forwarding test and space photography. The participation in the QB50 project shows the Chinese/Belgian multilateral collaboration. Chinese universities' four QB50 CubeSats are the earliest granted CubeSat project in China, hundreds of students and young scholars join the science research in six years. Now, all the CubeSats have passed the flight readiness review and will be launched in 2017. This paper will give the detail introduction of the payloads, the design of the four CubeSats, and other interesting experiments.