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Research on the accumulation leak detection method of helium mass spectrometry based on low vacuum

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At present, non-vacuum accumulation leak detection method and vacuum leak detection method are widely used in the total leakage rate test of spacecrafts. But there are some problems of non-vacuum accumulation leak detection method, such as low leak detection sensitivity, long test period and so on. While the vacuum leak detection method has the problems of high construction cost and complicated operation. Therefore, it is necessary to study a kind of accumulation leak detection method of helium mass spectrometry based on low vacuum, in order to improve the leak detection sensitivity while reduce the construction cost as much as possible. In this paper, the feasibility of accumulation leak detection method of helium mass spectrometry based on low vacuum was studied from theoretical aspect firstly. Secondly, the optimum vacuum degree of leak detection, repeatability of experiment results and leak detection sensitivity had been tested. The results show that the accumulation leak detection method of helium mass spectrometry based on low vacuum has a higher leak detection sensitivity and good repeatability.

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