



Contribution ID: 926

Type: **Poster Presentation**

## **C2Po1C-01 [13]: Research on the flow resistance of the J-T orifice of space 4K hybrid J-T cooler**

*Tuesday, 23 July 2019 09:00 (2 hours)*

Hybrid J-T cooler has been the most commonly used 4K cryocooler in space detectors. Although resistance of the J-T valve deeply affects the performance of the J-T cooler, few researches have been down especially on the J-T orifice. Because the J-T process is quite complicate, the dimensionless resistance coefficient is defined and deduced using dimensional analysis method to evaluate the pressure drop of the J-T orifice. Then, experimental research is carried out and a series of J-T orifices are experimentally tested. Then, the experimental correlation equations of the resistance coefficient at 4.2K are achieved based on the results of dimensional analysis and experiments.

**Primary author:** Dr MA, Yuexue (Technical Institute of Physics and Chemistry CAS)

**Co-authors:** Dr QUAN, Jia (Technical Institute of Physics and Chemistry CAS); Dr WANG, Juan (Technical Institute of Physics and Chemistry CAS); Dr LIU, Yanjie (Technical Institute of Physics and Chemistry CAS); Prof. CHEN, Houlei (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences); Dr LI, Jianguo (Technical Institute of Physics and Chemistry CAS); Prof. LIANG, Jingtao (Technical Institute of Physics and Chemistry CAS)

**Presenter:** Prof. CHEN, Houlei (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

**Session Classification:** C2Po1C - Aerospace Cryocooler II