



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, July 23, 2019 9:00 AM (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.

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