



Contribution ID: 298

Type: Poster

## C1Po2A-06: Development of a 35K single-stage coaxial pulse tube cryocooler

*Monday 10 July 2023 14:00 (2 hours)*

A high-efficiency single-stage coaxial pulse tube cryocooler operating at around 35K has been developed for long wavelength infrared detectors. The design considerations are presented, and with the cryocooler model of the Sage, the optimizations on the length of regenerator are described. By experimental investigation, the cooler prototype has achieved a no-load temperature of 24K, with an inertance tube and reservoir as the phase-shifter. By further adding the double-inlet to the phase-shifter, a lower temperature of 21K can be achieved. At present, the cooler prototype has a typically cooling performance of 2W at 35K with 200W input power at the frequency of 37Hz. Besides, the key parameters and performance of the designed PTC are presented at details.

**Author:** Dr WANG, Nailiang (Technical Institute of Physics and Chemistry)

**Co-authors:** Prof. QUAN, Jia (Technical Institute of Physics and Chemistry); Prof. CAI, Jinghui (Technical Institute of Physics and Chemistry); Prof. LIANG, Jingtao (Technical Institute of Physics and Chemistry); Prof. ZHAO, Miguang (Technical Institute of Physics and Chemistry); LEI, Yilin (Technical Institute of Physics and Chemistry, Chinese Academy of Science)

**Presenter:** LEI, Yilin (Technical Institute of Physics and Chemistry, Chinese Academy of Science)

**Session Classification:** C1Po2A: Aerospace Applications I: Devices