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C3Po1C-02 [07]: Emissivity measurement of materials used in cryogenic temperature

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Thermal radiation properties of materials are essential for the design of cryogenic apparatus. While the experimental data of the emissivity of materials are not sufficient, especially at cryogenic temperature. In this paper, a home built apparatus based on a two-stage Gifford McMahon cryocooler for rapid emissivity measurement was present. Emissivity of materials can be measured rapidly from 20K to room temperature with a dismountable sample test bar. The calibration process of thermal resistor bar and system error have been analysed. Emissivity measurements were performed in aluminium foils in the described apparatus.

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