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## **C2Po2C-06 [04]: A multi-experiment cryostat for conducting a range of measurements on SRF thin films and cavities**

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STFC Daresbury Laboratory has an ongoing R&D program for developing superconducting thin film technology for superconducting radio frequency (SRF) acceleration cavities. A number of A15 films has already been deposited at various deposition conditions, with various structure, morphology, and on various substrates. This has created a need to measure a range of superconducting properties of the thin films such as RRR,  $T_c$ , first penetration magnetic field, RF surface resistance and Q of the cavities and also the development of associated instrumentation for Low lever RF. A cryocooler based cryostat has been developed to enable these measurements which consists of two independent gas cooled chambers with sample space diameters of 22 and 54 mm, respectively, for operations in the temperature range between 4 and 20 K. The smaller chamber is equipped with a 2-T superconducting magnet and the large chamber is specially designed for measuring magnetic field penetration in planer thin films. The key design feature of the system is that the samples can be changed while the cryocooler is running, increasing the overall measurement throughput. The paper describes the design of the cryostat in detail with initial experimental results.

**Primary author:** Mr PATTALWAR, Ninad (STFC Daresbury Laboratory)

**Co-authors:** Dr MAY, Andrew (STFC Daresbury Laboratory); Mr CONLON, James (STFC Daresbury Laboratory); Dr MALYSHEV, Oleg (STFC Daresbury Laboratory); Dr SMITH, Paul A (STFC Daresbury Laboratory); Mr PATTALWAR, Shrikant (STFC Daresbury Laboratory); Dr WILDE, Stuart (STFC Daresbury Laboratory)

**Presenters:** Mr PATTALWAR, Ninad (STFC Daresbury Laboratory); Mr PATTALWAR, Shrikant (STFC Daresbury Laboratory)

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