



Contribution ID: 25

Type: **Poster**

## Cryogenic Sample Environment & Helium Recovery at ISIS

*Thursday, 17 October 2019 16:30 (2 hours)*

Cryogenic Sample Environment & Helium Recovery at ISIS

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The ISIS Experimental Operations Division (IEOD) Cryogenics team has a large equipment base. This includes a large number of helium based cryostats providing low, ultra-low temperature and high magnetic fields. The facility also offers many Gifford McMahon and Pulse Tube based closed cycle refrigerator (CCR) systems. These include 4K bottom and top-loading dry cryostats and the top loading ISISSTAT which is capable of a sustained operation at 1.8K with a cooling power of 240mW. Systems are optimized for the user by using thinned windows and can offer a range of temperatures between 0.03 and 700 Kelvin for sample environment.

IEOD Cryogenics currently offer several superconducting magnets that include both conventional and zero cryogen boil-off systems. Zero boil off is achieved by the re-condensation of helium by a Pulse Tube Refrigerator CCR. The systems include a wide angle chopper magnet for spectrometry, a 3D vector magnet and a 14T magnet for diffraction measurements.

IEOD Cryogenics offers the User a number of Ø50mm low temperature inserts. These include sorption and dilution refrigerator systems which can be used with standard variable temperature inserts of cryostats or superconducting magnets. It also offers a powerful cryogen-free dilution refrigerator and magnet system for neutron scattering experiments; that is capable of cooling large and heavy samples. These parameters can be crucial for a number of neutron experiments that require a combination of extreme conditions like high pressure, high magnetic field or large sample size.

The IEOD Cryogenics Team also support the Helium Recovery infrastructure that is newly introduced to the facility, Helium recovery operations and future challenges will also be presented.

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**Session Classification:** Poster