



Specifications of UHV bath cryostat:

- compact design
- UHV compatible, bakeable up to 200°C
- very low cryogenic consumption (⁴He hold time > 200 h)
- short sample / tip exchange distance
- full optical access to SPM setup
- modular design
- DN300CF or DN250CF base flange
- ø 55mm x 120 mm sample space
- optional three wobble stick driven shutter (LN₂, LHe, JT)

Specifications of 4He Joule-Thomson cooler:

- integrated high efficient back flow heat exchanger
- base temperature with ⁴He operation: ~1.3 K @ 2 mW
- base temperature in single shot operation: ~1.0 K

optional 3He operation:

- base temperature with ³He operation: ~600 mK @ 500 µW
- fully automatized gas handling system with just 7 liter ³He gas

optional 3T superconducting magnet:

- fully UHV compatible split pair magnet
- SPM access by 30 mm x 50 mm bore

In cooperation with Prof. Wulfhekel's (KIT, Germany) research team a new type of UHV compatible SPM low temperature cryostat has been developed. The new design is based on CryoVac's very successful and well established UHV SPM bath cryostat which is used for OEM system, too.

The new system consists of a three stage UHV cryostat:

- 20 liter LN₂ bath cryostat with a heat load of about 80 W at 77 K and a hold time of the LN₂ system of more than 150 hours
- 10 liter L⁴He bath cryostat with a heat load of about 35 mW at 4.2 K and a hold time of the L⁴He system of more than 200 hours
- close cycle Joule-Thomson cryostat system with either ⁴He or ³He operation

The system is designed for ⁴He and ³He operation, respectively. In ⁴He operation the guaranteed operation temperature is below 1.5 K and the reachable base temperature in single mode operation is even slightly below 1 K. In the optional upgradable ³He operation mode base temperature as low as 500 mK can be reached. In this mode the ³He throughput is about 3 liter gas per hours which leads to a cooling power of about 500 µW. The system design is ready for the integration, which is offered as an upgrade option.

The cryostat design opens up a sample/STM space of ø 55 mm x 120 mm. As standard the system can optional be quipped with three radiation shields: LN₂ level, LHe Level and low temperature stage level, respectively, each with its own shutter, driven by an wobble stick which can be used for sample/tip transfer, too. The large opening in the shields opens up a complete optical access of the SPM, sample and tip.

As a further option the system can be equipped with a 3T low current split pair superconducting magnet. The maximum baking temperature of this UHV compatible coil is limited to 90°C.

The compact design in combination with, for this kind of cryostat systems, very small connection flange of DN300CF (DN250CF with adapter flange) opens up the possibility to upgrade existing UHV systems or build a very compact experimental setup around this cryostat.