

Sample Requirements and Preparation

General Instructions:

1. We do not permit powders or any samples which can release material in D19– these must be encapsulated in the fume hood in D21E or in your lab before starting your session.
2. If you need to fix your sample to a holder with GE varnish, that needs to be done in the fume hood in D21E as well.

MPMS3 magnetometry 1.8-400 K:

- All samples that enter the MPMS3 chamber need to be well-secured to the sample rod and prepared in such a way that they pose no contamination risk to the instrument. The sample holders we have are:
 - Quartz paddle: Samples should be <4 mm in diameter and <5 mm in length.
 - Brass half-tube: Samples should be <4 mm in diameter and <5 mm in length.
 - For perpendicularly mounted films use the quartz sample braces. Samples should be ~4x4 mm; smaller is fine also but will need to be mounted to a larger non-magnetic substrate.
 - For power samples use the VSM powder holder. Typically, 1-10 mg can fit in the holder.
 - Straw (Best for DC measurements for low moment samples, do not use for temperatures >350 K) Samples should be 4x4 mm for perpendicular measurements.

MPMS3 oven option 300-1000 K:

- Ideal sample is a thin film or a plate < 5x5 mm; recommend <0.5 mm thickness
 - Max sample size: 10mm (L) x 5mm (W) x 2mm (H)
- The sample must tolerate being bonded to the heater stick with a high-temperature adhesive
- Other samples can be measured (as long as they are < 5mm wide) but the accuracy of their reported moment is not guaranteed.

MPMS3 Rotator Option

- Standard Sample Holder- max sample size < 5 mm sample. Make sure it fits on the platform
- Thin Film Sample Holder- can hold a <4 mm square sample, smaller is fine also but will need to be mounted to a larger non-magnetic substrate

MPMS3 Helium3 Option (0.4-1.8 K)

- Samples should be < 5 mm

MPMS3 Electronic Transport Option

- The sample needs to fit in the middle of the contact pads. On the parallel sample holder, Ch1 has a width of ~3 mm and Ch2 has a width of ~ 4 mm
- 4 mm. For the perpendicular sample holder, your sample should be < 2x 3 mm.