

μ SR sample preparation

Ideally, prepare a pressed pellet with diameter 15-20 mm and density 150 mg/cm².

Thickness of 1 mm is enough for $\rho > 100$ mg/cm² but 2 mm if the density is smaller.

It is not good to make the pellet thicker than 2 mm.

Muons stop within microns of penetration.

Heavier elements are more effective in stopping muons, so if the material is made of light elements, a thickness of 2 mm is better.

Samples will be mounted on a silver plate or inside a silver packet because Ag has negligible nuclear moment.

GE-varnish will be applied to thermalize the puck with the mount.

ISIS (Rutherford Appleton Lab) is a pulsed muon (and spallation neutron) source with two detectors for μ SR:

- MuSR has a dilution fridge and longitudinal field of 3000 G
- EMU is better equipped for LF experiments (4000 G)

The background from silver stage is about 20% of the data. It comes from muons that did not land inside the sample. The smaller the puck diameter, the larger the background will be.