Selecting a cell.

We have a variety of cells for use on Quokka. They vary chiefly in the path length and/or the volume of the cell. The choice of cell will be affected by:

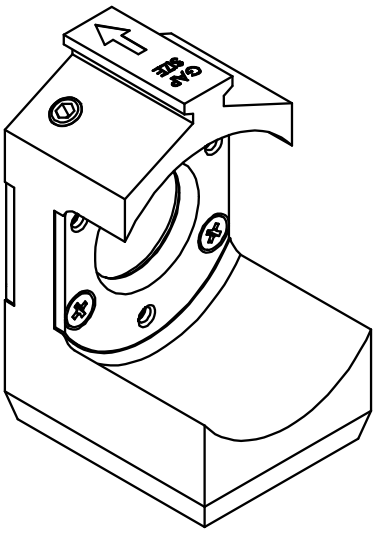
- The physical properties of the sample, and how difficult it is to present a homogenous sample of uniform thickness to the neutron beam.
- The physical conditions under which the measurement may be made, for example some cells are more suitable for high temperature measurements.
- The required sample thickness. While thicker samples will minimise data collection time (more scattering), the value of this approach may be offset by the onset of multiple scattering effects.
- The amount of sample you have and/or dilution of solutions which may be necessary to obtain scattering due to individual particles shape (form factor). More dilute samples may be used with longer path-lengths.
- The ease of removing the sample from the cell (cleaning). Cells are quite expensive and we do not consider them to be consumables.

The standard cells suitable for most samples encountered on Quokka are Hellma type banjo cells (see below). These cells are suitable for low viscosity liquids and suspensions.

Sample path-length (mm)	Cell volume (mL)
1	280
2	560
5	1400

The cells are mounted in the 20 position sample changer in standard aluminium blocks.

Standard demountable cell blocks are suitable for higher viscosity liquids and suspensions and pastes including samples which may be measured in the melt. These cells consist of a gap for a sample between two quartz windows. The windows are sealed by two O-rings (see below). The cells come in standard path-lengths of 1, 2, 3 and 5 mm long. Additionally there are blocks between where PTFE spacers of varying thicknesses may be inserted between quartz windows. The thickness of the PTFE spacer will define the path-length but may used to confine a sample to the central beam position when limited sample is available.



Sample path-length (mm)	Cell volume (µL)
0.1*	60
0.2*	120
0.5*	300
1	600
2	1200
3	1800
5	2900

*with PTFE spacer

The demountable cells may be used in either the 10 position or 20 position sample changer.