The Fisher-Johns Melting Point Apparatus: Measuring the MP of a Solid.

The Fisher-Johns melting point apparatus shown below, uses small round, glass coverslips, which may be found in your common drawer in a plastic box, to hold sample crystals.

The rate of temperature increase in the vicinity of the melting point must be small, about 2°C per min. This insures that the temperature of the hot plate, thermometer, and sample will be in thermal equilibrium. Increase the temperature rapidly at first and then slowly as the melting point is approached in the following manner:

1 Place a small amount of crystals, less than one mg, between two coverslips. Place the coverslips on the hot plate of the melting point apparatus. Turn on the apparatus. A light will illuminate the sample.

2 Set the heating control at 100 (full power to heater).

3 When the temperature is about 15 degrees below the anticipated melting point, change the setting to that indicated on the graph below.
(Example shows a MP of 150 °C requires a power setting of 61).

4 Observe the crystals through the lens and record the temperatures at which melting begins and at which the last crystal disappears. The MP should never be reported as a single temperature, but as a range.

NOTES:

It may be faster to do a rough estimate of MP using a fast heating rate, then repeat the scan on a fresh sample using a slow scan through the observed MP temperature range.

The apparatus may be cooled rapidly by placing a cool Al heating block or padlock on the heating stage. Another sample may be run once the stage temperature is 15-20 °C below its anticipated MP.

Used MP slides should be disposed of in the glass waste box in the waste hood.