## Taking a Melting Point

The melting point of a solid compound can be used to confirm its identity as well as get an idea of the purity of the sample. If a compound melts within 5° of the actual melting point, it is likely to be the correct compound. Very pure samples melt in a very small temperature range, while less pure samples melt over a wider temperature range. A melting point range of less than 1 °C is a very pure compound; 2-4 °C is fairly pure, while 5°C or over is not very pure.

The melting point is determined by slowly heating a sample and recording the temperature at which it begins to melt and where it turns completely liquid.

## Procedure:

- Before taking the melting point, make sure that compound does not contain water or an organic solvent. If it has just been rotovapped or filtered, allow it to air dry or place it on a watch glass on your hot plate (turned down low) for a few minutes. If solvent is present, the melting point will be harder to determine.
- To prepare the sample, get a melting point tube from the beaker next to the melting point apparatus. Tap the open end of the melting point tube into the sample to pack a little into the tube. You will only need about 1/4 cm of material just enough to observe clearly. Then turn it over and tap the closed end against the counter until the material slides to the bottom (this will again be difficult if it has solvent in it).
- If you know the identity of the sample, find out the temperature at which you expect the sample to melt before you begin. If the compound is an unknown, prepare two tubes; one to run rapidly to get a rough idea, the other to run more carefully and get a good reading.
- Take your tube(s) over to the melting point apparatus. Turn on the instrument and check the temperature before putting your sample in make sure it isn't already higher than the expected melting point of your sample (if it is, the only way to cool the instrument is to blow on it). Stick the tube in one of the small holes at the top.
- Turn on the heat and watch the temperature begin to rise. (Only one person should do this at a time!) The dial indicates how hot you want it to get (not the speed of heating). You can go quickly at the beginning, but you must slow down at least 10° early or you will get a false reading (the sample won't be at the same temperature as the thermometer).
- When you see the crystals begin to melt, record the temperature, including 1 decimal. Watch until all of the crystals have melted, and then record that temperature as well. This constitutes your melting point range.
- Compare your observed melting point range to the actual melting point of the compound. Make a judgment about the identity and purity of your compound.
- Put melting point tubes in the glass waste.