Measuring a Boiling Point

The boiling point of a liquid can be used to confirm its identity. Boiling points are more difficult to measure than melting points and the measurement isn't as accurate, so we won't use them very often, but if you have enough material, they can be useful.

Procedure:

- To measure the boiling point of a liquid sample, add 2-3 ml of the liquid to a conical vial and add a spin vane.

- Attach a reflux condenser and insert a thermometer so that the bottom is just above the level of the liquid – you want to determine the temperature of the vapors which have just boiled off of the liquid. Secure the thermometer with a thermometer clamp (you will have to use a separate support stand, as our thermometer clamps are not the same length as the regular clamps).

- When measuring the boiling point, glassware surrounding the boiling liquid must be well insulated so that the heat can't escape while the temperature is being measured. This is best accomplished by wrapping the glassware with aluminum foil, then using a larger piece to create a tent of foil around the whole thing.

- Turn on the heating and stirring and watch the temperature rise. Record the highest temperature that you observe.

- Remove the insulation and allow the apparatus to cool before removing the thermometer. Do not remover the thermometer while it is still hot – sliding it past the cold reflux condenser can crack the glass.

- You can also measure a boiling point while distilling a liquid. Simply put the thermometer through the Hickman still as well. Watch for the appearance of product condensing in the still, and record the temperature just as this is occurring. After the liquid is gone, the vial will simply continue getting hotter and bake the impurities onto your vial.