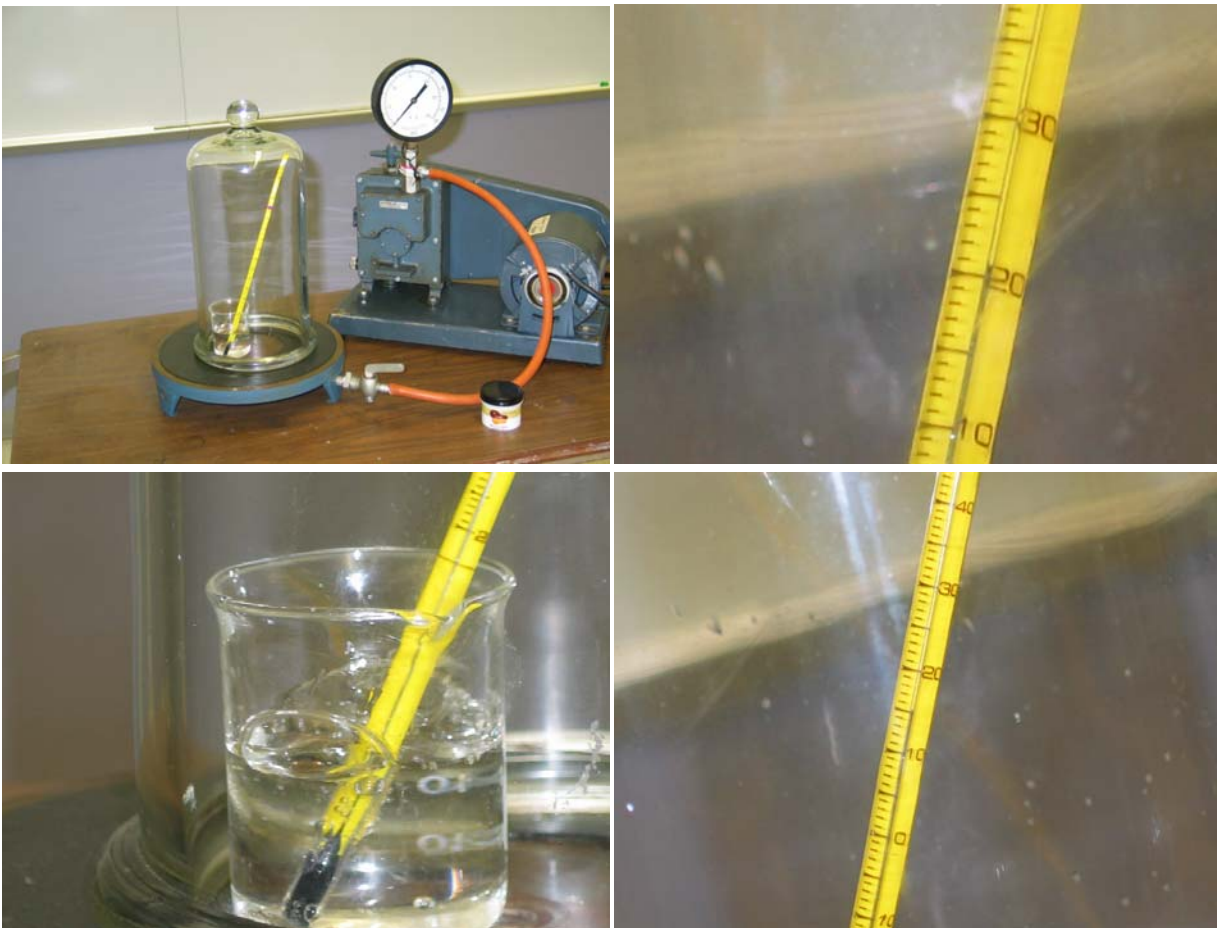


## Boiling – A Cooling Process?



**Purpose:** To demonstrate that reducing air pressure over water low enough results in boiling and cooling

**Location:** Room 136: bell jar & vacuum pump on wooden cart; 100 ml beaker & thermometer on shelf P3

Half-fill a small beaker with room temperature (or cold tap) water and place it under the bell jar with a thermometer as shown. Connect the bell jar to the vacuum pump with the valve at its base open (i.e. handle aligned with the tubing) and the release valve on the vacuum pump (just beneath the pressure gage) closed. Read and record the starting temperature of the

water (2<sup>nd</sup> photo). Turn the vacuum pump on and observe the water start to boil (3<sup>rd</sup> photo). Let the pump run about 5 or 6 minutes after reaching “full” vacuum (The pump will become quieter when it is reached.) Then record the final temperature of the water (4<sup>th</sup> photo). It should be about 5 or 6 degrees Celsius colder.

Shut the pump off and slowly open the release valve on the vacuum pump. You may remove the bell jar top only after the pressure inside it has reached atmospheric. (This may be difficult. Use both hands and be patient!)