CSEC Physics Handout

Topic: Evaporation & Boiling

Evaporation and boiling involve changing from the liquid to gaseous state.

The difference between boiling and evaporation are:

1. (a) Boiling only occurs at a definite temperature (called the boiling point) for a given pressure.

   (b) Evaporation occurs at any temperature at which the substance is a liquid and it may be accompanied by a lowering of temperature of the evaporating liquid.

2. (a) Boiling takes place throughout the whole liquid body and bubbles appear within the liquid (these bubbles consist of vapour (i.e. steam in the case of water).

   (b) Evaporation only occurs at the surface of liquids. No bubbles are formed.

3. Evaporation takes place spontaneously but boiling requires that a minimum rate of supply of energy be maintained. The similarity between the two processes is that no matter whether the vapour "boils off" or "evaporates off" energy (latent heat of vaporization) is required. In the absence of an external source of energy the latent heat of vaporization needed for evaporation is taken from the liquid itself, so cooling results.