



CHAPTER 7: ELECTRICITY



EXTRA ACTIVITY

The Effect of an Electric Field

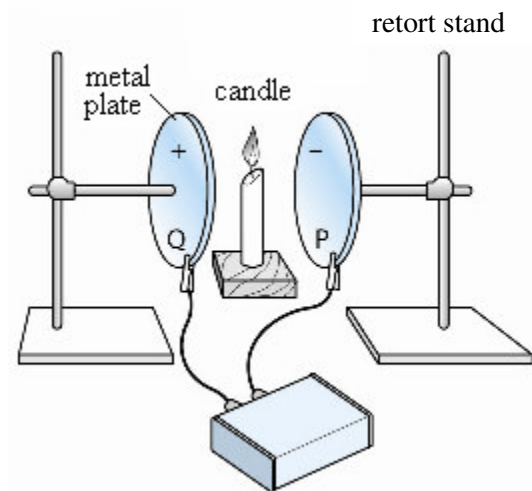
Aim: To observe the effect of an electric field on a candle flame

Materials: Nylon thread, a candle

Apparatus: Two metal plates, two retort stands with clamps, connecting wires

Procedure:

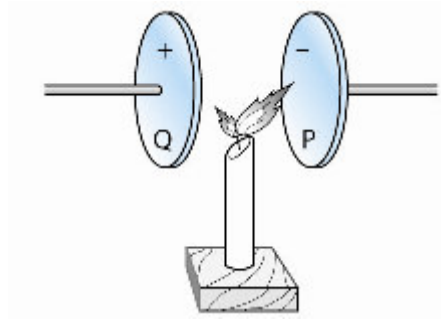
1. A candle is placed between two metal plates with a nylon thread (as insulator) as shown below.



2. The E.H.T. power supply is switched on and the voltage is adjusted to 4 kV.
3. The candle is lighted up.
4. The shape of the candle flame is observed.

Discussion:

1. When the E.H.T. power supply is switched on, the candle flame spreads out into two portions in opposite directions. The spread of the flame towards the negative plate, *P* is very much bigger than the spread towards the positive plate, *Q*.



2. The hot flame of the candle produces ionization of the air molecules in its surroundings. Positive and negative ions are formed around the flame. The positive ions are heavier, and move much slower, thus a bigger portion of the flame follows the positive ions to move towards the negative plate.
3. The negative ions are electrons and are much lighter and move faster, thus the spread of the flame that follows the negative ions are much smaller.