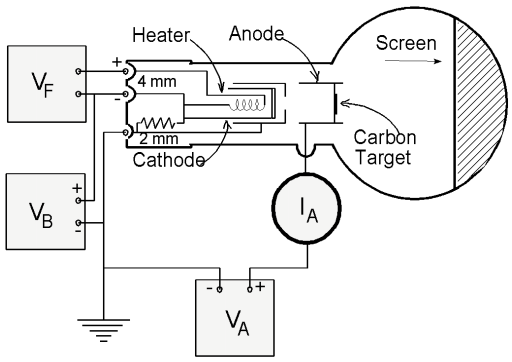
PRECAUTIONS

Electron Diffraction

I. Do not let the anode current exceed 200 micro-amps. Higher currents can destroy the graphite sample.



(image from webphysics.davidson.edu)

- Monitor the current continuously with an ammeter.
- As you increase V_A the anode current will increase. Watch it.
- As you decrease V_B (from a high of 50 V) the current will increase. Watch it.
- Before you turn on V_A, first apply 6.3 Vac to the filament and let it warm up for a few minutes, then set V_B at 50 V. Only after these two steps should you start to increase V_A.

II. Do not bump, jostle (or drop) the diffraction tube to avoid implosion.

III. High Voltage

- You will be using up to 5 kV in this experiment. This is a hazard.
- Have the instructor inspect your circuit before turning it on.
- Do not touch high voltage wires, plugs or sockets while the high voltage is on.
- Arrange wires and apparatus so that accidents will be avoided.
- It is common practice to keep one hand in your pocket around high-voltage so that you don't absent-mindedly create a complete circuit with your hands that passes directly through your heart.
- It's good practice to keep high voltage wire from crossing directly over ground wires.
- Keep any grounded metal objects with sharp edges/corners away from high voltage.
- Most multimeters will be damaged by voltages above a few hundred volts. Don't use them to probe high voltages.
- It is good practice to avoid poking around high voltage with probes. Instead, secure all probe connections beforehand, before the high voltage is turned on, then sit back and turn on the supply.