Photoelectric Effect Lab

Procedure

Make a chart with Quantity Measured/Symbol for Measurement/Instrument Used. Briefly, but completely, describe the procedure for this lab – and include a labeled sketch.

Data

Color	*V*	*λ*

E	*f*

Graphs

Graph Energy vs Frequency, with Energy on the y-axis. Use quadrants 1 and 4. Draw the best fits line and extend it all the way to the y-axis.

Questions

1) Use your voltage and wavelength measurements to find the max energy of the photoelectron in joules, and the frequency of the incident photon in hertz. Fill in the Energy/Frequency table. Show one example of each calculation here.

2) Find the <u>equation</u> of the best fits line from your graph. Show your work.

3) The slope of your best fits line should be Planck's constant. Find the <u>percent error</u> with the accepted value.

4) Use the y-intercept of your best fits line to find the work function of the metal in eV. Then use that value to find the threshold frequency of the metal. Show your work.

5) Use the x-intercept of your best fits line to find the threshold frequency of the metal. Then use that value to find its work function in eV. Show your work.

6) Finally, find the <u>percent difference</u> between the work function values you found in questions #4 and #5. What metal do you think was in the Photoelectric Apparatus?

Error Analysis

Thoroughly explain what the main source<u>s</u> of error are for this lab, and how you would correct them.