Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lab table # \_\_\_\_\_ at: 12:00 / 3:00 / 6:00

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Part A: H emission spectrum

## H spectrum

Include a screenshot of your H spectrum here.

Fill in this chart:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 𝜆 (nm) | ΔEif (eV) | *n*i | *n*f | $$\frac{1}{n\_{f}^{2}}- \frac{1}{n\_{i}^{2}}$$ |
|  |  |  | 2 |  |
|  |  |  | 2 |  |
|  |  |  | 2 |  |

## Hydrogen ionization energy E0.

Include your plot of Δ*E* vs $\frac{1}{n\_{f}^{2}}- \frac{1}{n\_{i}^{2}}$ and a trendline fit to $∆E\_{if}=E\_{0}\left(\frac{1}{n\_{f}^{2}}- \frac{1}{n\_{i}^{2}}\right)$. Make sure you constrain your trendline to go through (0,0).

According to your data, what is *E*0 in the Bohr hydrogen energy level formula? Compare this to the accepted value of 13.67 eV.

# Part B: colors

## White

Include your three “white” spectra (LED, incandescent, and Sun) here.

Which of the two artificial light sources has a spectrum most similar to the Sun?

## Green

Include your measurements of the green LED and the green food coloring here.

How are they similar / different?

## Chlorophyll

Include your chlorophyll absorption spectrum here.

Why does chlorophyll look greenish yellow?

Include your chlorophyll excitation spectrum here.

Why is the 405 nm excitation spectrum so much stronger than the 500 nm emission spectrum?