**SIMULATION LAB 3A**

**DETERMINATION OF WORK FUNCTION AND THRESHOLD FREQUENCY FOR A SPECIFIC METAL USING STOPPING POTENTIAL**

**Instructions**

- In Internet Explorer, go to [phet.colorado.edu](http://phet.colorado.edu) then Play with sims... > and select [http://phet.colorado.edu/new/simulations/sims.php?sim=Photoelectric_Effect](http://phet.colorado.edu/new/simulations/sims.php?sim=Photoelectric_Effect)
  
  OR

- In [the Photoelectric Effect Simulation](http://phet.colorado.edu/new/simulations/sims.php?sim=Photoelectric_Effect):
  - Set METAL to the selected metal (depending on your instructions, this may be randomly selected, or a specific metal assigned to you)
  - Determine the stopping potential for 5 frequencies that include the wide range of the available spectrum, following the procedure from previous activities
  - Record all observations in Table 3 (see reverse).
  - Plot a graph of stopping potential (V) versus frequency of incident light (Hz)
    - Determine the slope of the line of best fit in V·s and in J·s (1 eV = 1.6× 10⁻¹⁹ J)
    - Determine the x-intercept and the y-intercept (include range of uncertainty)
  - Compare your calculated values for work function and threshold frequency with accepted values (using text p. 853 or on-line: [Pulse Power](http://pulsepower.com) or [Hyper Physics](http://hyperphysics.phy-astr.gsu.edu))

**Conclusions**

- Compare your calculated values for work function and threshold frequency with accepted values (using text p. 853 or on-line: [Pulse Power](http://pulsepower.com) or [Hyper Physics](http://hyperphysics.phy-astr.gsu.edu))
**Raw Data**

Table 3. Determination of the stopping potential for 5 frequencies that include the wide range of the available spectrum

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Frequency (x $10^{15}$ Hz)</th>
<th>Colour</th>
<th>Stopping Potential (V)</th>
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**Other Findings / Conclusions:**