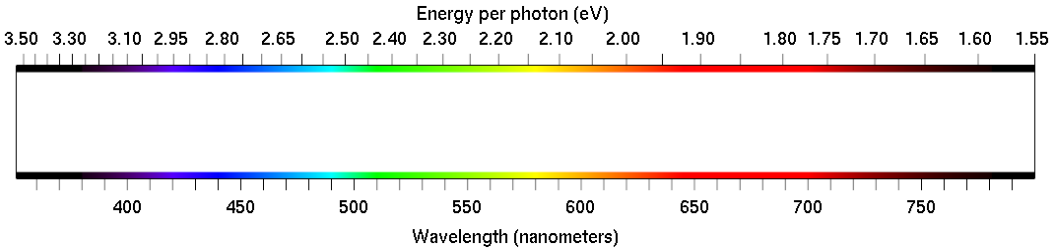
Quiz 5 - Spectroscopy

Name: _____ Lab Section: M0_____
(if you want your paper back)

1. Suppose an element has four energy levels of 0 eV, 2.2 eV, 4 eV, and 5 eV.

   (a) Draw an energy level diagram for this element below.

   (b) Indicate what spectral lines you would see with your eye if you ran electric current through a diffuse gas of this element.



   (c) Would there be any other photon energies emitted that you cannot see? If so, what are they?

2. Engineers construct a lighthouse by putting an object heated to thousands of Kelvin on top of a tower.

   (a) An observer standing right next to the hot object views its spectrum through a spectroscope. Would they see a continuous band of color, a few thin bright lines, or a continuous band of color with dark lines on top of it?

   (b) An observer standing on a ship 50 km away views the lighthouse through a spectroscope. Would they see a continuous band of color, a few thin bright lines, or a continuous band of color with dark lines on top of it?

3. Describe in a few sentences, in your own words, how the dark lines in the Sun's spectrum tell us what the Sun is made of.

When you are done, turn your paper in to one of the boxes we have for you.