

**Exercise 7—Due in section from 2 March**

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

**Spectroscopy**

Section: \_\_\_\_\_

In the room are several discharge lamps, gas tubes, and enough spectrometers for everyone. We will use the spectrometers to study the light emitted by several different sources.

1. Take a spectrometer and look through it with the grating near your eye and the slit aimed at an incandescent bulb (i.e., a bulb with a filament). The spectrum will appear off to the side. Your TA and fellow students will help you spot it. What does this spectrum look like?

2. Now use your spectrometer to view the fluorescent lights in the ceiling. You should see five bright emission lines. Write down their colors *from shortest to longest wavelength*.

3. There are several different gas tubes in the discharge lamps around the room. For each of the following, look at the gas carefully and write down the colors of the lines you see.

Element: Hydrogen (H)

Helium (He)

Mercury (Hg)

Lines: color  $\lambda$  (μm) color  $\lambda$  (μm) color  $\lambda$  (μm)

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

4. Find a neon (Ne) tube, and describe what you see.