

# Spectra Quest

Leader: \_\_\_\_\_ Reporter: \_\_\_\_\_

Skeptic: \_\_\_\_\_ Skeptic: \_\_\_\_\_ Skeptic: \_\_\_\_\_

**Purpose:** To find out the spectra of different light sources you can find locally.

**Prediction:** Before you do this activity, answer this question: You see a yellowish streetlight. What kind of spectrum does it have?

**Materials:** Diffraction gratings, One per group

**Using the gratings:** Turn the grating as you look at a light source so that you see the spectrum spread out the most. Note that you do NOT look straight through the grating at the source. You need to hold the grating in front of you and view at a slight angle. Then you'll see a spectrum. **BE SURE YOU GET THE GRATING'S ORIENTATION RIGHT BEFORE YOU CONTINUE!** You do not need to be right next to a source to see its spectrum clearly. For the Night Spectra Quest card, hold the card horizontally with the comparison spectra facing you.

**Procedure:** Your group will need to survey local light sources around your classroom, examine them carefully with your Night Spectra Quest, and infer the nature of the light sources by picking the letter on your card that best matches what you see. This survey is best done just after dark in an urban area. Bring a notebook to jot down your observations, then summarize them in the table below. Be sure in column 2 (Description of Spectrum) that you compare the spectra you observe to those on the Night Spectra Quest card. Here is a suggestion: look at as many different kinds of streetlights as you can find and also the signs for businesses (you will find that not all of these signs contain neon!).

Light Source - Please include the location of the light source	Description of Spectrum	Card Letter (Best Match)	Inference of Type of Source -To be completed after all observations and in the classroom.
1. Street Light			
2. School Light			
3. Auto Head Light			
4. Business Light			
5. Other			
6. Other			
7. Other			

## Lamp Spectra

- A. Incandescent
- B. Fluorescent
- C. Mercury (low pressure)
- D. Mercury (high pressure)
- E. Metal halide
- F. Sodium (low pressure)
- G. Sodium (high pressure)
- H. Neon sign (red)
- I. Neon sign (other colors use tinting and phosphors)