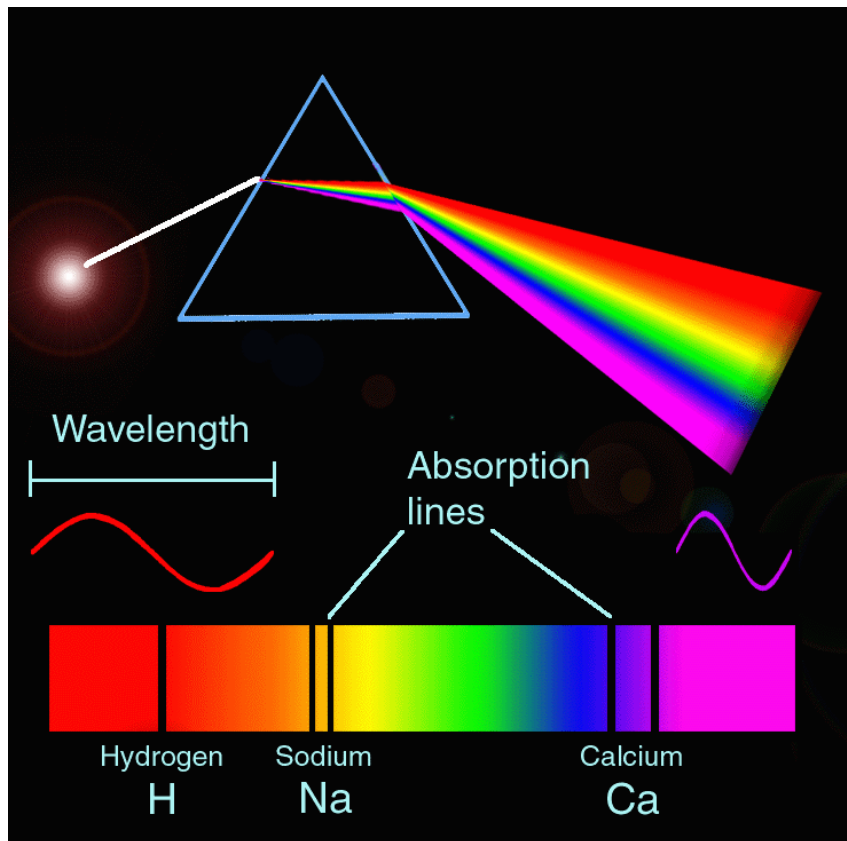


# Taking Apart the Light

Previsit Activity for Space Exploration



Courtesy Ian Short

**Grades 9- 12**  
**CDE Standards**  
Science: 2,4,4  
Math: 2,3,5

## **Preparation and Materials**

**Estimated Preparation Time:** 30 minutes

**Estimated Activity Time:** One 45-minute time period

## **Materials**

Pencil

*Taking Apart the Light* article

*Taking Apart the Light* activity sheet

## **Learning Goals/Objectives**

Students will

- Analyze and label spectra of unknown elements
- Read a graph and extrapolate information to identify energies of absorption lines

## **Connection to *Space Odyssey***

Every kind of gas, when energized, glows with a unique pattern of colored lines called a spectrum. These spectra can be used to identify gases, much like your fingerprints can be used to identify you. Astronomers use the science of spectroscopy to identify the chemical composition of stars. When visiting *Space Odyssey*, you will have the opportunity to view the spectrum of several different gases at the Gas Tube Spectroscopy demonstrations.

## **Advanced Preparation**

1. Download copies of the activity sheet and article from the following website:  
[http://spaceplace.jpl.nasa.gov/teachers/eo3\\_spectroscopy.pdf](http://spaceplace.jpl.nasa.gov/teachers/eo3_spectroscopy.pdf)
2. Make photocopies of the activity sheet and article (if desired) for each student in your class.

## **Classroom Activity**

1. Present the information from the “Taking Apart the Light” article to your students. This can be done either as a reading assignment or a lecture.
2. Discuss the information learned from the article and decide how this information can be used to help astronomers identify the chemical composition of stars and planets.
3. Have students complete the activity page at the end of the article.

### **Extensions/Variations**

1. Create an experiment for students to identify the composition of salts. Each student group will need a Bunsen burner and several types of salts. When students place the salts in a flame, they will be able to view the salts' spectrum using a diffraction grating. Have the students plot the spectra of the salts and compare with a known spectrum to see if they can identify the composition of each salt.
2. Check out the CLEA Web site. Teachers can download the student interactives for identifying spectra of unknown stars.  
<http://www.gettysburg.edu/academics/physics/clea/CLEAsoft.overview.html>

### **Resources**

[http://spaceplace.jpl.nasa.gov/teachers/eo3\\_spectroscopy.pdf](http://spaceplace.jpl.nasa.gov/teachers/eo3_spectroscopy.pdf)