

LAB

1 Laboratory Activity

Star Colors

In 1665, Isaac Newton demonstrated that sunlight is composed of many colors. Today the spectra of a star is one of the most important tools scientists use to determine the star's surface temperature and composition. The Draper system of spectral classification is used in this activity.

Strategy

You will define the term *star*.

You will observe and record star colors.

You will classify stars based on their color.

Materials

binoculars or telescope (optional)

graph paper

Procedure

1. On a clear, bright night observe the stars with your eyes or with the binoculars or telescope.
2. Use some landmarks and divide the sky into four sections. Label the landmarks in the diagram under Data and Observations.
3. Observe and record the color of each star in each section. Record your observations on your diagram under Data and Observations.
4. Using the information in Table 1, compile your data in a table showing the star color, spectral type, and number of stars in each section. Set up your table on one end of your graph paper.
5. Under the table on the graph paper, draw a bar graph showing the star spectral types and the number of stars in each spectral type.

Table 1

Draper's Star Classification Chart		
Star spectral type	Color	Surface temperature (K)
M	red	2,000–4,000
K	red to orange	3,500–5,000
G	yellow	5,000–6,000
F	yellow-white	6,000–7,500
A	white	9,000
B	bluish-white	11,000–25,000
O	bluish-white	60,000

Laboratory Activity 1 (continued)**Data and Observations**

Diagram night sky here.

Questions and Conclusions

1. What property did you use to classify a celestial body as a star?

2. Which star spectral type is the most abundant?

3. Which star spectral type is our Sun?

4. What is the surface temperature of our Sun?

5. The temperature of stars is given in Kelvins. Changing from the Celsius scale to the Kelvin scale is very easy: $K = ^\circ C + 273^\circ$. What is the temperature of the Sun in Celsius degrees?

Strategy Check

_____ Can you define the term *star*?

_____ Can you observe and record the colors of the stars?

_____ Can you classify stars based on their color?