SPECTRAL FINGERPRINTS

OVERVIEW

Lesson Summary:

A spectroscope is a device used to produce the spectral lines of elements. Spectral lines of chemical elements produce unique patterns. By studying the spectra produced by the sun and reflected light from planets or moons, scientists can determine what elements are present in the planets' atmospheres. In this activity, students learn how spectral lines can be used to identify elements present on unknown planets.

Objectives:

The student will:

- discover that elements produce unique spectral lines; and
- use known spectral lines to determine unknown elements.

GLEs Addressed:

Science

[5-8] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.

[7] SB1.1 The student demonstrates an understanding of the structure and properties of matter by using physical properties (e.g., density, boiling point, freezing point, conductivity) to differentiate among and/or separate materials (i.e., elements, compounds, and mixtures).

[8] SB1.1 The student demonstrates an understanding of the structure and properties of matter by using physical and chemical properties (i.e., density, boiling point, freezing point, conductivity, flammability) to differentiate among materials (i.e., elements, compounds, and mixtures).

Search Terms:

- spectral lines
- chemical elements
- gases
- oxygen
- nitrogen
- neon
- helium
- Pierre Jules Cesar Janssen
- Norman Lockyer
- Sir William Ramsey
- Anders Jonas Angstrom