

# Asteroid Compositions: Spectra

## Teacher's Notes

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**Introduction.** Continue your students' involvement with asteroid science! This module extends students' exploration of asteroids into determination of asteroid compositions, probable connections of asteroids with meteorites, and consideration of geologic processes that probably occurred on asteroids. They will see evidence that many of the same processes they are studying on Earth also occurred on the asteroids. Geologic processes are driven by universal physical laws (gravity, friction, fluidity, etc.), the conditions existing in a given environment, and the nature of the materials available. They are not unique to the Earth environment.

This activity is designed to take about 3-4 classroom periods, including presentations of, and discussion about, additional concepts, and doing the activities. This activity, using spectra to estimate asteroid compositions, can be done entirely in the classroom. The companion activity, using asteroid colors to estimate composition, includes Remote-control Telescope observations.

**1. Present *The Meteorite Connection*, *Asteroid Spectra*, and *Asteroids, Meteorites, and Geologic Processes*** that you can download from the NOAO Asteroid web site:

<http://www.noao.edu/education/asteroids/>

Student understanding of different meteorite types is enhanced by letting them see actual samples in addition to the pictures. Collections can often be found at a local museum or planetarium. A representative collection can be borrowed from NASA center education offices. Borrowing these collections requires some training, but the collections come with additional educational materials. Another useful resource is an interactive meteorite identification site at the University of Portland:

<http://meteorites.pdx.edu/ID-intro.htm>

**2. Doing the Activity.** Provide paper copies of the activity for each student. Make a transparency of the graph of meteorite spectra, and make sure it is the same size as the graph of asteroid spectra for easy comparison.