

FURTHER EXPLORATION

ONLINE DISCOVERY

The Moon Mineralogy Mapper is one of NASA's instruments onboard the Indian Space Research Organization's Chandrayaan-1 spacecraft. This spectrometer will map the entire lunar surface, and reveal the minerals of which it is made. <http://moonmineralogymapper.jpl.nasa.gov/>

NASA's Lunar Reconnaissance Orbiter mission will return detailed information about the surface of the Moon and the lunar environment through instruments including spectrometers and radar. <http://lunar.gsfc.nasa.gov/>

The Clementine Mission tested instruments in a long-term space environment and acquired a global multispectral map of the Moon's surface. <http://nssdc.gsfc.nasa.gov/planetary/clementine.html>

ADDITIONAL READING

The New Moon. Paul Spudis, 2003, *Scientific American*, volume 289, number 6, pages 86–93. Past lunar missions have provided scientists with abundant information about the Moon, but have raised new questions that will be addressed with future missions.

Planetary Science Research Discoveries provides an archive of articles about the formation and evolution of the Moon and the lunar environment. <http://www.psrcd.hawaii.edu/Archive/Archive-Moon.html>

Alien Vision: Exploring the Electromagnetic Spectrum with Imaging Technology. Austin Richards, 2002, SPIE Press, ISBN: 0819441422. Explore how different wavelengths of light reveal new knowledge in the fields of medical research, archaeology, planetary science, and more!

MORE CLASSROOM RESOURCES

The Electromagnetic Spectrum — http://imagine.gsfc.nasa.gov/docs/science/know_12/emspectrum.html Imagine the Universe helps middle- to high-school students investigate the electromagnetic spectrum through interactive web pages. Lesson plans explore electromagnetic radiation and emission spectra.

Moon Mineralogy Mapper Education Website — <http://m3.cofc.edu/> A series of hands-on inquiry-based activities engage middle-school students in understanding and interpreting reflectance spectra from Earth and Moon rocks. These activities are part of a suite of educational resources that investigate the geologic history of our Moon, the Chandrayaan-1 mission, spectrometry, and future lunar exploration.

Active Astronomy — <http://www.sofia.usra.edu/Edu/materials/activeAstronomy/activeAstronomy.html> Hands-on activities and demonstrations engage middle- to high-school students in learning about infrared light.

Cool Cosmos — <http://coolcosmos.ipac.caltech.edu/> What does a cat look like in infrared? Tour infrared Yellowstone and learn more about this portion of the electromagnetic spectrum through discussion, activities, images, and games.

ALTA II Reflectance Spectrometer for the Classroom — <http://www.vernier.com/labequipment/altaspectrometer.html> The ALTA is a rugged, simple Classroom instrument designed to help students in grades 5 through undergraduate learn about light, color, and spectroscopy. Using the spectrometer, students can collect data reflected from rocks, minerals, and other materials in specific wavelengths of the visible to infrared electromagnetic spectrum. Lesson plans are included.

Rock Around the World — <http://ratw.asu.edu/> Send a rock for spectral analysis! Scientists studying Mars are collecting spectra from Earth rocks so that they can compare the spectral data collected by martian spacecraft.

ABOUT THIS POSTER

This is one of a three-poster set that examines how our geologic understanding of the Moon will be used as we plan to live and work there in the future. The **poster front**, designed for **sixth- to ninth-grade students**, illustrates how scientists can collect and use visible and invisible electromagnetic radiation reflected from the Moon to identify rocks and minerals on its surface. This information will help scientists and engineers plan future lunar exploration. The **poster back** is designed to provide **educators** with background information, ideas for lessons, and resources to support further student exploration. The complete set of posters can be found at http://www.lpi.usra.edu/education/moon_poster.shtml.

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