

Mineral Identification using FTIR Spectroscopy

Tuesday | 3:40pm-4:00pm | [Weeks Geo: AB20](#)
Teaching Demo

Leaders

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Demonstration

We will have available two or three benchtop FTIR spectrometers equipped with different data collection modules. Participants will have the opportunity to use the spectrometers to collect mineral spectra for hand samples and powders and to search for matching spectra in a database of mineral spectra.

Abstract



Opportunity to introduce FTIR and Raman spectroscopy into the undergraduate Geoscience curriculum at all levels at modest cost. We have acquired and used these instruments in introductory and intermediate courses to identify minerals in hand samples and powders, and in intermediate courses and research projects to investigate characteristics of mineral chemistry and bonding. We have found that many geoscience educators are not aware of the availability and ease-of-use of these spectroscopic tools. Our hands-on FTIR demonstration will introduce Rendezvous participants to the technology and we will provide teaching materials that we have used for lab activities based on the FTIR spectrometer. We are excited about the use of spectroscopy in our geosciences curricula because it provides us with a new opportunity to incorporate active learning into the study of minerals with data gathering and analysis not unlike powder x-ray diffraction, but at a fraction of the cost. Students who complete spectrometer activities have a broader understanding the meaning and uses of spectroscopic data in the geosciences.

Context

As mentioned in the description, we use the spectrometers to add to the tool set for activities involving mineral identification and characterization in courses at all levels. In mineralogy courses we use the spectrometers as a way to explore the relationships among crystal chemistry, crystal structure, and the observed spectra.

Why It Works

FTIR and Raman spectroscopy are important research tools for mineralogists and geochemists. Introducing spectroscopy earlier in a student's career gives them a chance to learn about the possibilities and limitations of this type of data collection and analysis. We find that students are interested in and motivated by access to the technology.

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