Inference of surface chemical and physical properties using mid-infrared (MIR) spectral observations.

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Abstract

Reflected or emitted energy from solid surfaces in the solar system can provide insight into thermo-physical and chemical properties of the surface materials. Measurements have been obtained from instruments located on Earth-based telescopes and carried on several space missions. The characteristic spectral features commonly observed in MIR spectra of minerals will be reviewed, along with methods used for compositional interpretations of MIR emission spectra. The influence of surface grain size, and space weathering processes on MIR emissivity spectra will also be discussed. Methods used for estimating surface temperature, emissivity, and thermal inertias from MIR spectral observations will be reviewed.