

Infrared spectroscopic study of crystallization of chondritic amorphous silicates

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We will report infrared absorption spectra of amorphous silicate with chondritic composition and their spectral variation involved with crystallization process.

The initial amorphous sample was synthesized by Sol-Gel method that has an advantage to get homogeneous amorphous materials at relatively low temperature without dilution of volatile elements. Annealed samples with different crystallization degree were prepared from the initial sample for infrared absorption spectroscopy.

The measurements were carried out by use of FT-IR spectrometer (Nicolet Nexus 670) at Kyoto Pharmaceutical University. The measured wave number range and resolution were 7000-50 cm⁻¹ and 1.0 cm⁻¹, respectively.

On the spectrum of the initial amorphous sample, broad and smooth absorption features appeared at approximately 10 and 20 micrometers, that are typical for amorphous silicate originated from Si-O stretching and O-Si-O bending vibration modes. While on the spectra of annealed samples, sharp and prominent features appeared.

We will discuss the spectral behavior with crystallization degree and difference of spectral features from previous works.

References

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