Fourier Transform Infrared Studies of Aluminous Goethites and Hematites

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Abstract: Synthetic aluminous hematites and goethites have been examined by Fourier-transform infrared spectroscopy. For aluminous hematites prepared at 950 ° C a linear relationship exists between Al content and the location of the band near 470 cm^{-1}, up to 10 mole % Al substitution which is shown to be the solubility limit. The spectra of aluminous goethites prepared in two different ways are qualitatively similar to each other, but differ as to the relationship between the position of the band near 900 cm^{-1} and the Al content. The spectra of the two series of hematites produced by calcining the goethites at 590 ° C also show a strong dependence of band position and intensity on the goethite preparative method.

Key Words: Aluminum • Fourier transform • Goethite • Hematite • Infrared

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