The Emissivity of Mars and Callisto in the Far Infrared

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Infrared spectra of Mars were taken with the two complementary spectrometers onboard the European Space Agency's Infrared Space Observatory, ISO, both in moderate- and high-resolution mode. From the strengths of the observed water lines we derived information about the vertical distribution of water vapor and on the emissivity of the dust/surface system in the far infrared. The emissivity values obtained with this method were then compared with laboratory spectra of several minerals.
A complete spectrum of Callisto from 50-180 μm is presented. It shows very good overall agreement with a model originally developed to match the far-infrared spectra of asteroids. Slight discrepancies between observation and model at certain wavelengths are discussed.