Systematic study of parameters influencing spectral behavior of laboratory mixtures

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The spectral behavior of mixtures of particulate materials has important implications for the study of planetary surfaces, in particular after that, in the last decades, the spatial resolution of orbiting instruments has improved considerably. In fact, a planetary surface should be considered as composed by mixtures of different minerals and rocks and, in such scenario, a good understanding of the spectral behavior of a mixture, as a function of the characteristics of the components, is necessary for the interpretation of the observational data.

In this work, we report the main results of a laboratory test program aimed to check the spectral behavior of several mixtures of particulate samples. The laboratory reflectance spectra are taken in a wide wavelength range from visible (VIS) to mid–infrared (MIR) (i.e. from 0.35 to 25 μm). Then they are carefully analyzed to check how their spectral characteristics are changing as a function of several parameters, such as the mean reflectance level, the percentage and the grain size of the particles of each material.