## The Potential for and Relevance of Hisingerite on Mars

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The past ten years of orbitally-acquired visible-near IR reflectance spectra of Mars have revealed diverse mineralogy, including widespread clay minerals in ancient (>3 Ga) terrains. Many of these deposits have been reported to be consistent with Fe/Mg smectites such as saponite and nontronite. Here we well-characterized present laboratory data of several hisingerite samples and demonstrate that ambiguity may exist in the spectral detection of hisingerite and Fe/Mg-smectites. Hisiginerte, the ferric equivalent of halloysite, is of importance given that it has adsorption and hydration properties that are quite different from smectites. In addition, though the organic preservation potential of smectites is well documented (and this has made their detection on Mars of great importance), the preservation potential of hisingerite has not been explored. In this context, it is worth re-evaluating clay detections on Mars to detmine if some may in fact be more consistent with hisingerite. Such a distinction may be possible by examining the width of the metal-OH absorption near ~2.28  $\mu$ m (Figure 1).



Figure 1. Example lab spectra of hisingerite samples compared to smectites; many features are similar, suggesting the potential for underestimation of hisingerite on Mars.