A New High Temperature Spectral Library for Modeling the Surfaces of Hot, Rocky Exoplanets

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JWST's Mid InfraRed Instrument (MIRI) provides a unique opportunity to spectroscopically characterize the surface compositions of terrestrial exoplanets for the first time. Close-in, rocky planets orbiting M dwarfs are ideal targets for these studies, and recent *Spitzer* and *JWST* measurements have shown that many have little to no atmosphere. There are currently six hot rocky exoplanets, including LHS 3844 b, whose thermal emission spectra will soon be measured with MIRI LRS. Current models for the bare-rock spectra of these planets utilize a spectral library from Hu, Ehlmann, & Seager (2012) spanning a limited number of surface types. This library was also measured at room temperature, and does not capture temperature-dependent changes in spectral feature shapes. Here we present a new spectral library that includes a larger variety of rock types with varying textures (solid slab, coarsely crushed, and fine powder), as well as high temperature (up to 830 K) emissivity measurements for select samples. We use this new library to quantify the precision needed to distinguish between different surface types and textures, as well as the relative importance of high-temperature spectral libraries for modeling the bare-rock surface thermal emission spectra of hot rocky exoplanets with *JWST*.