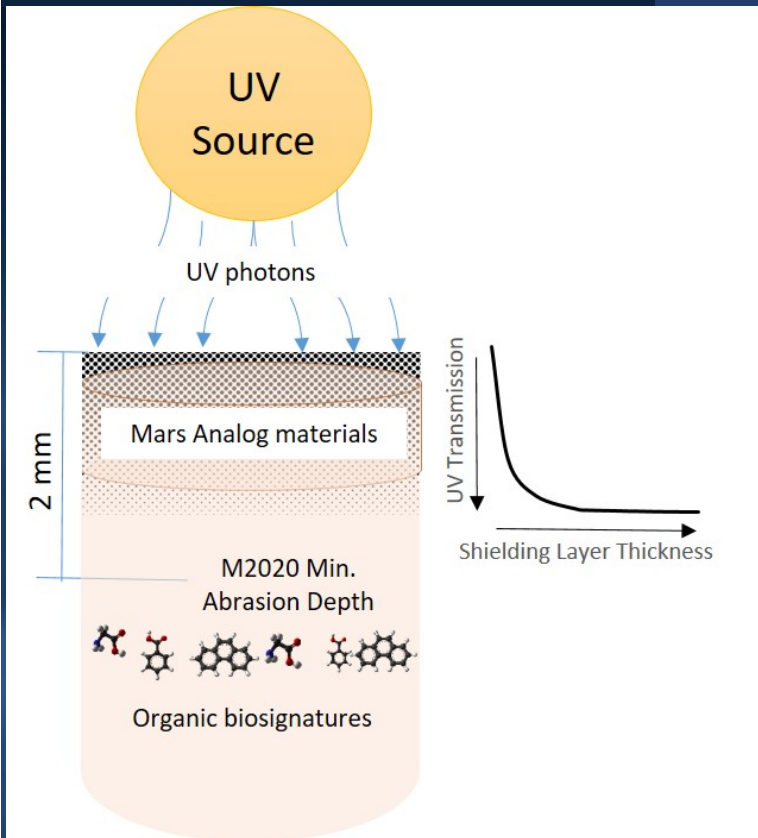


UV Attenuation of Mars Analog Materials



UV radiation can be transmitted through rocks and minerals and degrade organic biosignatures. The minimum M2020 abrasion depth should expose well preserved surfaces, but these surfaces will also be subject to degradation the longer they are exposed.

Carrier, et al. (2019) JGR: Planets

The penetration of potentially destructive UV radiation with martian surface materials shows penetrations to depths greater than anticipated.

- The transmittance of UV radiation through four Mars analog materials was studied as a function of wavelength and layer thickness. UV photons were found to penetrate to depths resulting in a large effective radiation dosage over long time scales in all materials studied, and the most damaging type of UV radiation (UVC) was found to have higher transmittance values.
- Understanding the nature of organics on the Martian surface, and the likelihood of preservation and detection, requires understanding destruction mechanisms that exist in the near surface.
- This research allows for a better understanding of the depths that organics, and potential habitable environments, could exist in the martian near surface, and constrains how deeply they can be detected using an instrument like SHERLOC - a UV Spectrometer that will fly on the Mars 2020 rover.