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The OSL dating behavior of Martian sediment analogue materials exposed to a simulated Martian solar spectrum MARISSA DETSCHEL, Dept. of Physics, North Dakota State Uni., KEN LEPPER, Dept. of Geosciences, North Dakota State Uni. — Optically stimulated luminescence dating (OSL) is a terrestrial geochronometric technique being developed for *in-situ* dating of the geomorphic features on the surface of Mars. The solar spectral irradiance reaching the surface of Mars includes ionizing ultraviolet (UV) radiation that does not reach the surface of the Earth. In view of this, an optical system was constructed that closely simulates the Martian solar spectral irradiance, including seasonal variations due to the planet's orbit and attenuation by atmospheric dust. Upon exposure to this simulated environment, the OSL dating behavior of a suite of Martian sediment analogue materials were catalogued. Results suggest that the presence of the additional ionizing UV radiation on the surface of Mars will not compromise optical dating measurements of K- and Ca-feldspars, anhydrite, or hydrous Ca and Mg sulfates. However, Na-feldspar does appear to retain a trapped charge population, which could hinder optical dating of sediments containing more than trace amounts of sodic feldspars.

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