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A SIMULATOR FOR THE INCIDENT UV-RADIATION AT THE MARTIAN SURFACE – CALIBRATION AND PERFORMANCE

The UV-radiation represents an important parameter of environmental conditions at the surface of Mars. UV radiation can cause specific damages and modifications in the DNA-containing living systems and is involved in the formation of catalytically produced oxidants such as superoxide ions and peroxides. These are capable to oxidize and subsequently destroy organic matter. Lab simulations are necessary to investigate and understand the effects of organic matter removal at the Martian surface. We designed a radiation apparatus which simulates the solar spectrum at the Martian surface between 200 and 400 nm. The system consists of an UV-enhanced xenon arc lamp and special exchangeable filter-sets and mirrors for simulating the effects of the Martian atmospheric column and dust loading. The filter set consists of an array of different filter segments with cuts to enable partial free path of light. The system was calibrated by means of an optical photo-spectrometer to align the ray output with the theoretical target spectrum and to ensure spectral homogeneity. We present preliminary data on calibration and performance of our system, which is integrated in the Austrian Mars simulation facility.