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# The UV-VIS spectrometer for the ExoMars mission

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The ExoMars scientific payload is optimised to search for biomarkers and potential astrobiological habitats in the Martian near-surface environment. The UV-VIS spectrometer (UVIS) is designed to determine for the first time the magnitude of the UV flux reaching the Mars surface in the ranges of UV-C (190-280nm) and UV-B (280-315nm) that in general have a deleterious impact on most carbon-based organic structures. Also, intense short wavelength UV can lead to the production of oxidizing radicals that could affect the potential for extant life to persist. Great uncertainty lies in the derivation of optical properties of suspended dust in the martian atmosphere for UV wavelengths - little agreement has been reached to date, due to the lack of detailed spectroscopic investigation, and these parameters are required for accurate modelling of the transfer of UV to the surface in astrobiological investigations. This instrument will provide surface spectra ranging from the UV to visible, thus allowing the derivation of optical properties across a wide region of wavelength and simultaneous cross-comparison with many previous observations in the visible region of the spectrum. UVIS is an extremely compact spectrometer, and is currently in development through ESA to miniaturise and raise technology development in time for the ExoMars mission. UVIS will monitor the local solar irradiance at the Mars surface at high resolution (1-2 nm) throughout the UV and visible spectrum (200-650 nm), with a mass requirement of $<$300g. The spectrometer utilises a 1024 element linear photodiode array, with a Czerny-Turner optical bench with a focal length of only 75 mm, all contained within an extremely small enclosure, and will be ruggedized to withstand the extreme environmental conditions of spaceflight. Presented here are initial results from laboratory experiments, verifying the concept of the spectrometer for its development for the ExoMars mission to Mars.