

TNA2 Report 2010

Facility AU-MSL dusty wind tunnel

One TNA2 experimental visit was performed in 2010 to the AU-MSL facility. The visit took place in the period 16th-19th December 2010 and the activity will be summarized below. The requested duration of the experiment was 5 days, the actual duration was 4 days.

Experiment Title; Measuring the Optical Properties of Suspended Martian Dust
Leader; Manish Patel
Co- investigator; Jon Mason

The motivation for this study was to investigate the scattering of light by suspended dust particulates as a simulation of the observed scattering of sun light by suspended dust particulates in the Martian atmosphere. Specifically the spectral variation of the optical and ultraviolet light scattering by different minerals and Mars analogue dust materials was to be quantified using effective opacities in the range of 0.5 – 2.0. A secondary goal for this study was to test a prototype optical (UV) sensor under Mars simulation conditions to support its application as a lander/rover based instrument.

The primary goals of this experimental visit were achieved with the successful operation of the prototype instrumentation within the Mars simulator and the production of suspended dust concentrations corresponding to opacities in the required range over optical path lengths of around 2m. Several pure minerals and Mars analogue materials were studied using the LED based optical light source as well as a UV discharge light source. The data is now being analyzed in detail.

J.P. Merrison, AU-MSL