Mapping the spectral and mineralogical variability of lunar breccia meteorite NWA 13859 by VNIR reflectance spectroscopy

Bruschini E.1, Carli C.1 and Tosi F.1

1Institute for Space Astrophysics and Planetology (IAPS) – INAF, Via del Fosso del Cavaliere 100, 00133, Rome, Italy

SUPPLEMENTARY MATERIALS

***Spectral parameters***

After continuum removal we considered several spectral parameters to describe quantitatively our results. The spectral and band parameters considered here are band center (BC), band depth (BD), band area (BA), band centroid (BT) and spectral slope. The band center (BC) is the position of the band minimum in wavelength space while the band depth is the difference between the continuum reflectance and the band reflectance at the wavelength corresponding to BC

|  |  |  |
| --- | --- | --- |
|  |  | (Eq.S 1) |

Where is the amplitude (depth) of the band at the i-th wavelength () and nm.

The band centroid was calculated according to (Eq.S *2*)

|  |  |  |
| --- | --- | --- |
|  |  | (Eq.S 2) |

Which corresponds to the weighted average of the band position (weight: amplitude). We also calculated the slopes of the spectra in several spectral ranges different from sample to sample. The slopes of the silicate-graphite mixtures were then normalized to the slope of the end-member via (Eq.S *3*)

|  |  |  |
| --- | --- | --- |
|  |  | (Eq.S 3) |

Where the superscripts and refer respectively to end-member and graphite-mixture and the subscripts and (with ) to the wavelength at which the reflectance () is considered.

Immagine che contiene diagramma, linea, Diagramma, testo

Descrizione generata automaticamente

Figure S 1 Definition of the spectral band parameters used in this work.

The band asymmetry is calculated as the ratio of the area of the band on the right of BC (AR) and the area of the band to the left of BC (AL):

|  |  |  |
| --- | --- | --- |
|  |  | (Eq.S 4) |

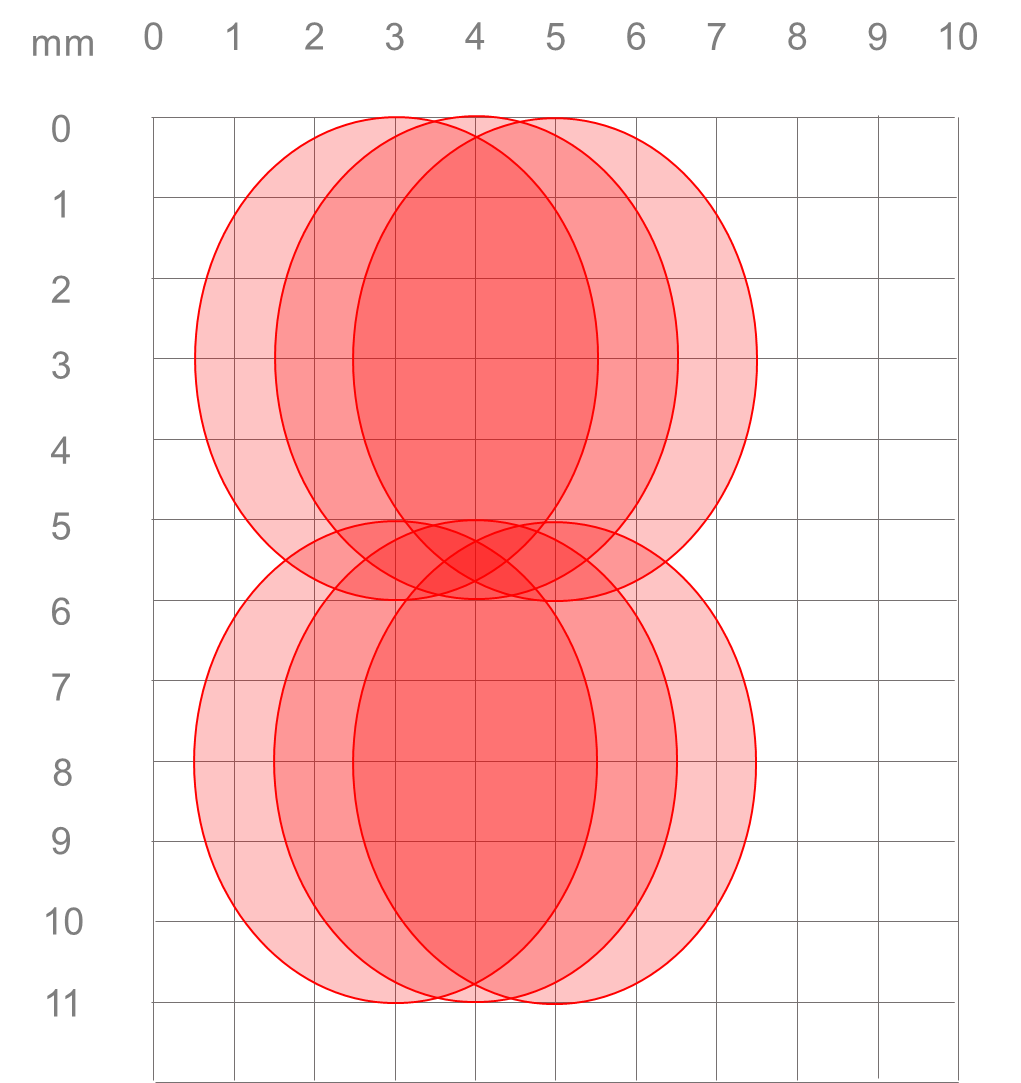


Figure S 2. Measurement scheme for the transect. Each successive measurement is shifted along the X-axis of 1 mm and 5 mm along the Y-axis.

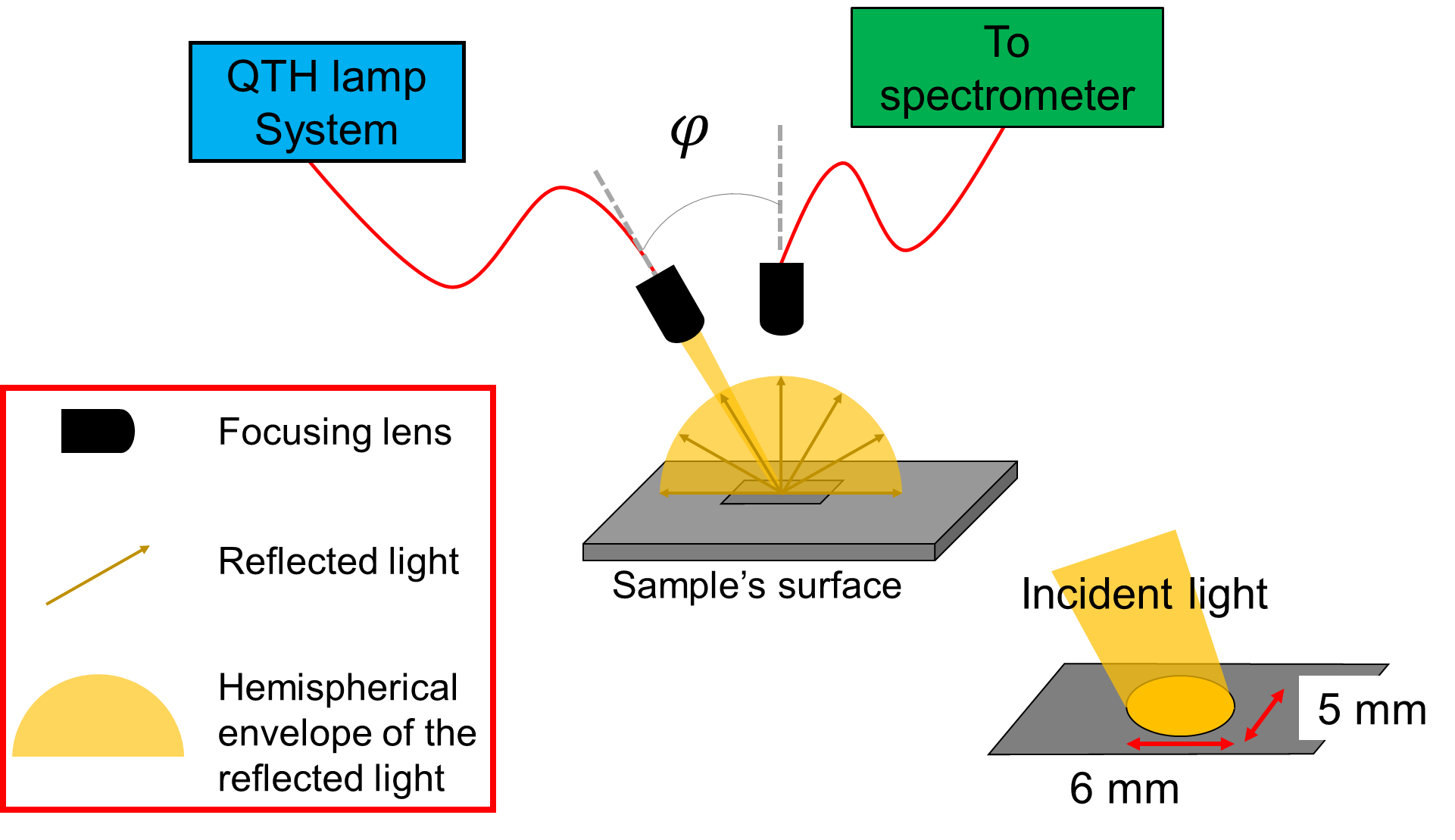


Figure S 3 Scheme of the setup used in this study.