SSHADE Users Newsletter - July 2023

Dear SSHADE users,

General info

This ‘SSHADE user newsletter’ first focuses on **the specific search tool for meteorites** as SSHADE contains a large amount of data on these objects. Then we highlight the **BYPASS database** dedicated to VIS-NIR reflectance spectra of ices (H_2O, CO_2), pure or associated with minerals, salts and organics.

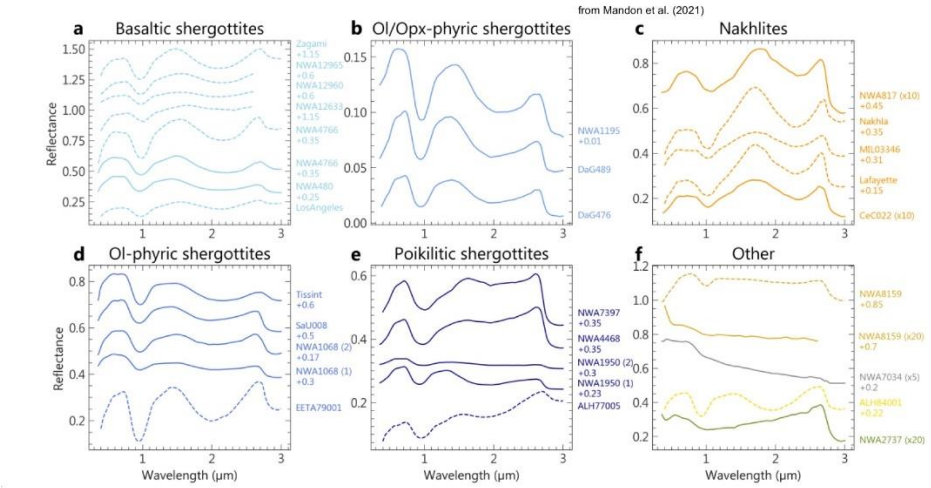
SSHADE Users community

The SSHADE user community is growing very fast, with over 100 new researchers every year. On 30 June, **SSHADE welcomed its 500th subscriber!**

Focus on Meteorites:

SSHADE is probably the database that contains the most spectra concerning extraterrestrial objects, particularly meteorites, with **over 900 spectra on more than 300 different meteorites** covering most meteorite groups and classes:

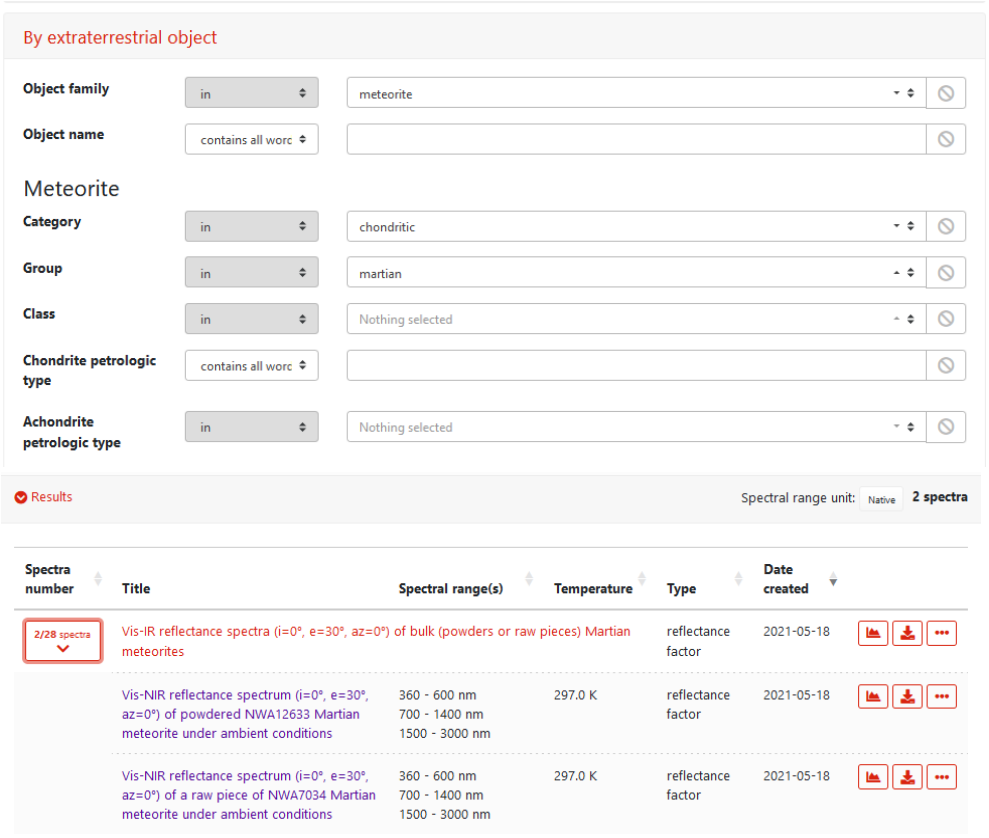
- carbonaceous chondrites, such as the primitive CM Paris
- ordinary chondrites, such as the ForestVale EOC chondrite
- achondrites, such as the howardite Northwest Africa NWA 2060
- Martians meteorites, such as Allan Hills 84001



A dedicated group of filters (under the **“By extraterrestrial object” tab**, screenshot below) is available in “Search spectra” to efficiently search for specific meteorites relevant to your scientific studies. You can:

- search by the ***name*** of the meteorite
- select meteorites according to their ***group(s)*** and/or ***class(es).*** Select in the lists.

- For chondrites and achondrites you can select specific ***petrologic types***:
    - Chondrites: {1, 1/2, 1-2, 2, 2.0, 3, 3.0, 3.00, 3.05, 3.1, 3.10, 3.15, 3.1/3.4, 3.2, 3.3, 3.4, 3.5, 3.6, sup 3.6, 3.7, 3.8, 3.9, 3/4, 3-4, 3-5, 3-6, 4, 4/5, 5, 5/6, 6, 7}
    - Achondrites: list provided



You can for instance search all spectra of Martian chondritic meteorites existing in SSHADE, or newly recovered meteorites such as Northwest Africa 14700 and Northwest Africa 1449.

- For each spectrum you will also get **a link to the meteorite** with information on its origin and recovery, its petrological and weathering classifications, and some information on its composition. Most of the information is extracted from the Meteoritical Bulletin database. Now it's your turn to explore!
- This search tab also allows you to restrict your search to **other families of extraterrestrial objects**: micrometeorites, IDPs and planetary samples, i.e. samples collected at the surface of planetary bodies such as the Moon and asteroids.

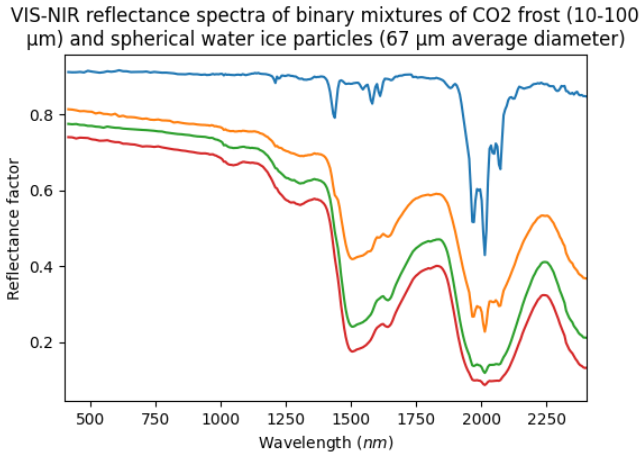
Focus on the BYPASS database

The Bern icY Planetary Analogues Surface Spectroscopy (BYPASS) database contains visible and near-infrared reflectance data of analogues for various planetary and small body surfaces with a focus on **samples made of ices (H_2O mostly, but also CO_2), pure or associated with various types of mineral dust, salts and organics.**

The samples preparations and measurements are performed in the Planetary Ice Laboratory of the Physics Institute at the University of Bern. The samples are often **processed in simulation chambers** where they evolve through sublimation at low temperature and in near-

vacuum and can be irradiated by energetic electrons and ions. In this case, **time series of their evolutions are recorded**.

- At the moment, BYPASS consists mostly of **VIS-NIR (0.4-2.4 µm) reflectance spectra** collected with the Mobile Hyperspectral Imaging System (MoHIS) instrument. In the near future, we plan to add visible Bidirectional Reflectance Distribution Function (BRDF) measurements of the same samples collected over wide ranges of incidence, emission and phase angles as well as bidirectional polarization phase curves.



- The datasets are relevant **for the interpretation of observations from Mars** (for instance some mixtures of CO_2 and H_2O ice: EXPERIMENT_ZY_20180208_000), **comets, and the icy moons** of the outer Solar System (for instance sublimation of H_2O ice with salts in the ice particles: EXPERIMENT_RC_20200506_000).

Have fun with SSHADE data!

The SSHADE Team

All previous user newsletters are stored in the dedicated **'News' page** of the SSHADE Wiki