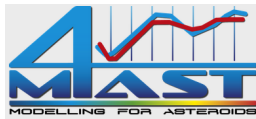


Spectra Access



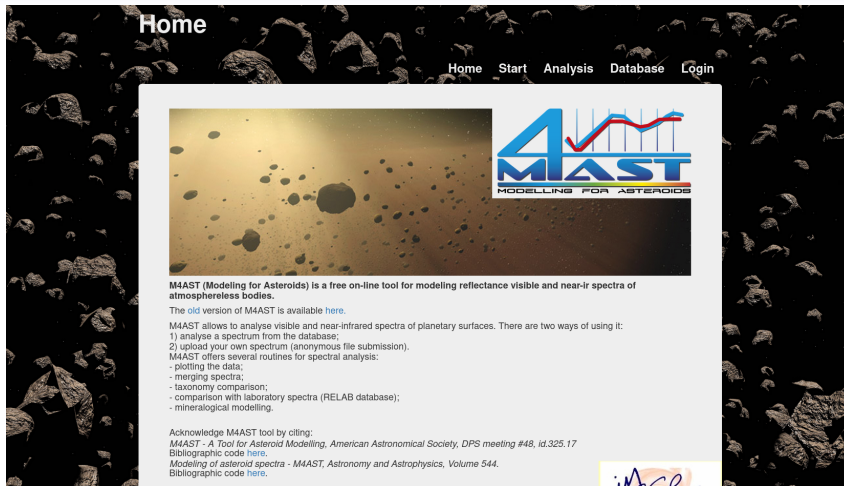
cLassy

- **Spectra are complex data products**
 - Wavelength, Reflectance, Irradiance, ...
 - Instrument Metadata
 - Sample Metadata
- **Spectra Databases for Ast./Comets/Met.**
 - PDS, CDS, RELAB
 - SMASS, MITHNEOS
- **Spectra Aggregators for Asteroids and Meteorites**
 - SSHADE, M4AST, cLassy
 - Processing required
 - Few updates

Demo

The next slides show an outline of the demoed material.

M4AST



Home

Home Start Analysis Database Login

M4AST
MODELLING FOR ASTEROIDS

M4AST (Modelling for Asteroids) is a free on-line tool for modeling reflectance visible and near-ir spectra of atmosphereless bodies.

The [old](#) version of M4AST is available [here](#).

M4AST allows to analyse visible and near-infrared spectra of planetary surfaces. There are two ways of using it:

- 1) analyse a spectrum from the database;
- 2) upload your own spectrum (anonymous file submission).

M4AST offers several routines for spectral analysis:

- plotting the data;
- merging spectra;
- taxonomy comparison;
- comparison with laboratory spectra (RELAB database);
- mineralogical modelling.

Acknowledge M4AST tool by citing:
M4AST - A Tool for Asteroid Modelling, American Astronomical Society, DPS meeting #48, id.325.17
Bibliographic code [here](#).
Modeling of asteroid spectra - M4AST, Astronomy and Astrophysics, Volume 544.
Bibliographic code [here](#).

in the end

<https://spectre.imcce.fr/m4ast/index.php/index/home>

classy

classy

[GitHub](#) · [ReadTheDocs](#)

In Short

1. Upload your spectra
2. Add literature spectra
3. Classify spectra
4. Export classifications

Development of `classy` and the web interface are on-going.

Last update: 2024-01-09

classy

Welcome to the web interface of `classy`, a tool for the analysis of asteroid reflectance spectra. This interface provides basic functionality. For the full feature set, you can have a look at the `python` package [here](#).

This interface allows to visualise, classify, and export reflectance spectra and their metadata. You can provide your own data, use literature data, or a combination of the two. To get started, just keep scrolling.

Optional: Upload Your Spectra

Upload CSV files

Optional: Add literature spectra

Here you can select spectra from the literature to include in your analysis. Write a query and select the spectra to add by marking it in the `select` column.

Query and select from 66572 Spectra

Classify

Classify

Either upload your spectra or select literature spectra to continue.

← Manage app

<https://classy.streamlit.app/>

RELAB

PDS Geosciences Node Spectral Library

Home Search Cart Contribute Data Help

NASA Planetary Data System
GEOSCIENCES
Washington University in St. Louis

Search Filters

[Reset All](#)

Spectral Database

☒ RELAB 21,379

RELAB Note: Purity or composition of samples sent by users to the NASA RELAB facility are not independently verified by the RELAB spectroscopy facility.

☐ XAS Synthesized Glasses 130

Keyword Search

Chemical Composition

Specimen Type

Specimen Origin

Material State

Material Type

Material Sub Type

Specimen Size

Mineral Type

Rock Type

Measurement Type

Reflectance Measurement Range

Result List - Filters Applied

Specimens: 13,708/11,733 Measurements: 21,379/21,509

[RELAB](#)

[Add All Results to Cart](#) [Remove All Results to Cart](#)

Legend: Chemistry Image Thin Section Sample

Page 1 of 235, Items 1 to 90 of 11708

Specimen	Specimen Name	Specimen Description	Measurements
AA-A1S-001	Ammonium anrite (4.001)	Synthesis and characterization of K-free NH ₄ -anrite (Astrobiology)	2
AA-A1S-002	Ammonium anrite (4.002)	Synthesis and characterization of K-free NH ₄ -anrite (Astrobiology)	2
AA-A1S-003	Ammonium anrite (4.004)	Synthesis and characterization of K-free NH ₄ -anrite (Astrobiology)	2
AA-A1S-004	Ni-bearing ammonium anrite (4.005)	Synthesis and characterization of K-free NH ₄ -anrite (Astrobiology)	2
AB-DTB-003	Pathfinder Airbag (Kevlar)	Mars Pathfinder airbag material: Kevlar. About eight layers over one another.	1
AB-EAC-001	Albiteite- ALB101 0 - 45 μ m	From Minerals Unlimited	3
AB-EAC-001-E	Albiteite- ALB101E	From Minerals Unlimited	1
AC-PCP-001	Basalt: BaG1 0 - 70 μ m	A fresh unaltered basalt, with some phenocrysts of olivine, pyroxene and plagioclase	6
AC-PCP-002	Basalt: BaG2 70 - 250 μ m	A fresh unaltered basalt, with some phenocrysts of olivine, pyroxene and plagioclase	1

Quick View

Compare measurement plots from search results

Expand specimens and click the measurement thumbnails to view plots in the quick view graph. Click the thumbnail a second time to remove it from the quick view.

Current Plot

Wavelength (nm)

Reflectance

AA-A1S-001

Move cursor over spectrum to display values

Download Graph Download Measurements

X Min: X Max: Update Graph Reset

Y Min: Y Max: Clear Graph Contents

Display as Wavenumber

<https://sites.brown.edu/relab/relab-spectral-database/>

SSHADE

[Help](#) [Log in / Register](#)

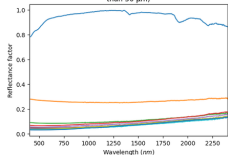
Solid Spectroscopy Hosting Architecture of Databases and Expertise

[Search spectra](#)[Search band lists](#)[Search bands](#)[Search publications](#)**Latest spectra dataset**1 / 5 [←](#) [→](#)

EXPERIMENT_CF_20200813_000 : VIS-NIR reflectance spectra of binary mixtures of silicon dioxide (SiO₂) particles (0.5 - 10 μm) and Juniper charcoal particles (less than 50 μm) | BYPASS database

2023-12-07

VIS-NIR reflectance spectra of binary mixtures of silicon dioxide (SiO₂) particles (0.5 - 10 μm) and Juniper charcoal particles (less than 50 μm)



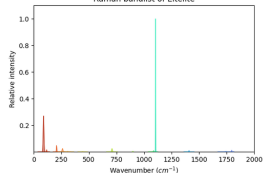
— VIS-NIR reflectance spectrum of pure silicon dioxide (SiO₂, 0.5 - 10 μm)
— VIS-NIR reflectance spectrum of a binary mixture of silicon dioxide and Juniper charcoal (10 wt.%)
— VIS-NIR reflectance spectrum of a binary mixture of silicon dioxide and Juniper charcoal (20 wt.%)

Latest bandlists dataset1 / 5 [←](#) [→](#)

BANDLIST_RAMAN_Eitelite : Raman bandlist of Eitelite

2023-12-27

Raman bandlist of Eitelite



<https://www.sshade.eu>

SSHADÉ

The screenshot displays the SSHADÉ software interface. The top menu bar includes Window, TAP, Registry, Edit, Interop, and Help. Below the menu is a toolbar with icons for file operations and a 'Run Query' button. The main window is divided into several sections:

- Metadata:** A table listing various metadata fields. The table has columns for Name, Schema, Type, Unit, Indexed, Description, UCD, UType, xtype, and Flags. The table is sorted by Name.
- Service Capabilities:** A section below the metadata table, showing 'Query Language: ADQL-2.0', 'Max Rows: 20000 (default)', and 'Uploads: 20MB'.
- ADQL Text:** A text area containing a SQL query: `SELECT * FROM sshade_spectra.apn_core`.
- Examples:** A section at the bottom left with a 'Run Query' button.

The Metadata table contains the following data:

Name	Schema	Type	Unit	Indexed	Description	UCD	UType	xtype	Flags
granule_id	name	char(4)			Internal table row index, which must be unique within the table. Can be alphanumeric.	meta.id			
granule_gid		char(4)			Common to granules of same type (e.g. same map projection, or geometry data products). Can be alphanumeric.	meta.id			
obj_id		char(4)			Associates granules derived from the same data (e.g. various representations/processing levels). Can be alphanumeric, may be the ID of an object.	meta...			
dataproduct_type		char(4)			The high-level categorization of the data product, from a controlled vocabulary (e.g., im for image, sp for spectrum). Multiple terms may be used.	meta...			
target_name		char(4)			Standard IAU name of target (from a list related to target class), case sensitive	meta...			
target_class		char(4)			Type of target, from a controlled vocabulary	src.cl...			
time_min		double	d		Acquisition start time (in J2000 as UTC at time of observation)	time...			
time_max		double			Acquisition stop time (in J2000 as UTC at time of observation)	time...			
time_sampling_step_min		double	s		Sampling time for measurements of dynamical phenomena, lower limit.	time...			
time_sampling_step_max		double	s		Sampling time for measurements of dynamical phenomena, upper limit.	time...			
time_exp_min		double	s		Integration time of the measurement, lower limit.	time...			
time_exp_max		double	s		Integration time of the measurement, upper limit.	time...			
spectral_range_min		double	Hz		Spectral range (frequency), lower limit.	em.fr...			
spectral_range_max		double	Hz		Spectral range (frequency), upper limit.	em.fr...			
spectral_sampling_step_min		double	Hz		Spectral sampling step, lower limit.	em.fr...			
spectral_sampling_step_max		double	Hz		Spectral sampling step, upper limit.	em.fr...			
spectral_resolution_min		double			Spectral resolution, lower limit.	spect...			
spectral_resolution_max		double			Spectral resolution, upper limit.	spect...			
c1_min		double	deg		Longitude on body, lower limit.	pos.b...			
c1_max		double	deg		Longitude on body, upper limit.	pos.b...			
c2_min		double	deg		Latitude on body, lower limit.	pos.b...			
c2_max		double	deg		Latitude on body, upper limit.	pos.b...			
c3_min		double	km		Altitude from reference surface, lower limit.	pos.b...			
c3_max		double	km		Altitude from reference surface, upper limit.	pos.b...			
s_region		char(4)			Obscure-like footprint, valid for celestial, spherical, or body-fixed frames	pos.o...		adq...	
c1_resol_min		double	deg		Resolution in the first coordinate, lower limit.	pos.a...			
c1_resol_max		double	deg		Resolution in the first coordinate, upper limit.	pos.a...			
c2_resol_min		double	deg		Resolution in the second coordinate, lower limit.	pos.a...			
c2_resol_max		double	deg		Resolution in the second coordinate, upper limit.	pos.a...			
c3_resol_min		double	km		Resolution in the third coordinate, lower limit.	pos.r...			
c3_resol_max		double	km		Resolution in the third coordinate, upper limit.	pos.r...			
spatial frame type		char(4)			Flavor of coordinate system, defines the nature of coordinates. From a controlled vocabulary, where 'none' means undefined.	meta...			

TOPCAT → TAP Query → “SSHADÉ”

Tutorial

[20min] Tutorial notebook on spectra access with SSHADE and TAP

- Basic: Access of SSHADE database using TAP
- Advanced: Creating an astroquery module for SSHADE