BRINGING LAB ANALYTICAL DATA FOR ASTROMATERIALS TO THE PLANETARY DATA ECOSYSTEM

K. Lehnert, J. Mays, J. D. Figueroa, P. Ji, A. Johansson, L. Profeta, L. Song, Lamont Doherty Earth Observatory/Columbia University

ASTROMAT
Astromaterials Data System

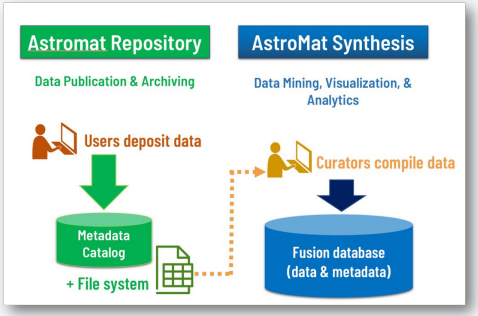
AstroMat (astromat.org)

The Astromaterials Data System (AstroMat) supports preservation, discovery, access, interoperability, and reusability of laboratory analytical data from past, present, and future studies of astromaterials, in particular those using samples curated at the NASA Johnson Space Center, thus maximizing the scientific return of NASA's investment into sample return missions, sample curation, and data acquisition.

Development and operation of Astromat is funded through a 5-year grant from NASA (2019 - 2024).

Astromat consists of two systems:

- The **AstroMat Repository**, where researchers can share and archive their data in compliance with funders' and publishers' policies for Open and FAIR data.
- The **AstroMat Synthesis**, an actively curated compilation of past, present, and future data that enables novel ways of mining and analyzing laboratory analytical data for Astromaterials samples, making them 'data science ready'.



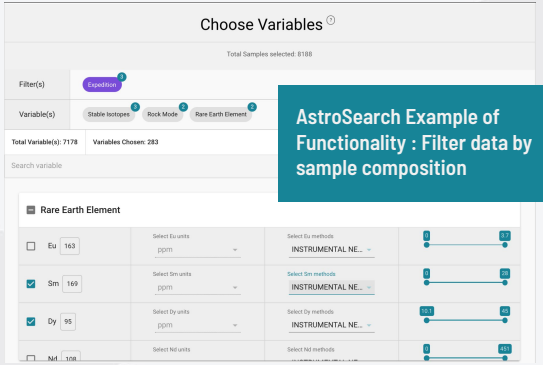
Maximizing the utility and impact of laboratory data of astromaterials for science and education.

info@astromat.org

Mining Data in the AstroMat Synthesis

AstroMat data curators gather, harmonize, and synthesize laboratory analytical data for samples from the JSC Astromaterials Collections that has been published in the literature. Compilation has been completed for lunar samples, and the majority of meteorite data for the Antarctic Meteorite Collection have been ingested.

The AstroMat Synthesis can be mined via **AstroSearch**, an API-driven search application that allows users to query and filter data taking advantage of the extensive metadata about samples and analytical methods to explore the data, and to extract customized subsets of the data integrated across publications.



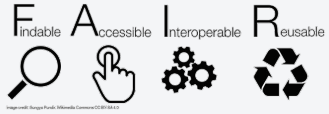
AstroSearch Example of Functionality : Filter data by sample composition

Make Data FAIR with the AstroMat Repository!

The AstroMat Repository offers data publication and archiving services for FAIR data as a trusted repository. Services include:

- Interactive online submission;
- Curatorial review of submitted content;
- DOI registration with DataCite;
- Long-term archiving in the Planetary Data System;
- User support and training.

AstroMat is currently seeking certification as a Trusted Repository and works with publishers through the COPDESS initiative to align data publication workflows at AstroMat with publishing workflows of journals.



Integration with the PDS

The schema of the AstroMat Synthesis database has now been mapped to the PDS4 schema so that all data in AstroMat can be integrated and archived with the PDS.

Conceptual schema mapping the AstroDB content to the PDS4 . (S. Richard & S. VanBommel)