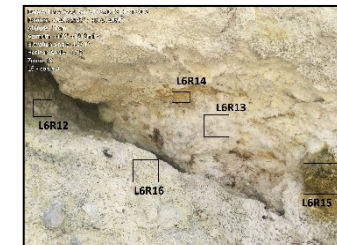
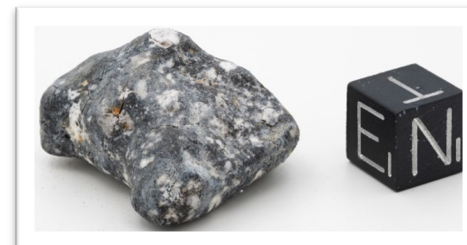
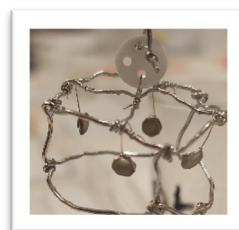




# The Mirabelle database @ CRPG Nancy

- **Samples:** natural and synthetic minerals/simulants/terrestrial rocks and meteorites (Mars, Moon, Aubrites) which have been fully characterized in terms of petrology



- **Data:** VNIR-SWIR (0.4–2.5 microns) spectroscopic data acquired with a **point spectrometer** (Fieldspec4) and **2 hyperspectral cameras** (Hypspec VNIR3000-N and SWIR640)
- **Approach:** Mirabelle features **both laboratory and field (georeferenced) data**. Current field-based experiments include:
  - ❑ The Atacama salt flats
  - ❑ The Solfatara volcano
  - ❑ The Altiplano-Puna Volcanic complex
  - ❑ The Azorean fumarolic fields (to be published)

Who is behind Mirabelle?

**Creators**

- Flahaut, Jessica (GRPG / CNRS)
- Ito, Gen (GRPG / CNRS)
- Barthez, Marie (CRPG / UL)
- Payet, Vincent (CRPG / CNRS)

**Scientific managers**

- Flahaut, Jessica (CRPG / UL - CNRS)

**Database managers**

- Ito, Gen (CRPG / UL - CNRS) → M. Martinot (2025)

**Database feeders**

- Barthez, Marie (CRPG / UL - CNRS)
- Martinot, Mélissa
- PEIGNAUX, Clarisse (CRPG / UL - CNRS)

**Organizations**

- Centre National de la Recherche Scientifique (CNRS)
- Université de Lorraine (UL)



# Ongoing challenges



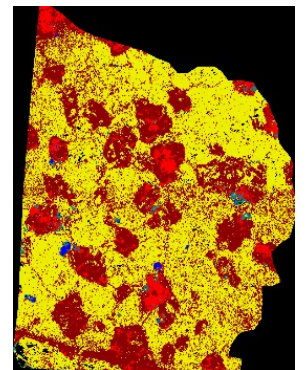
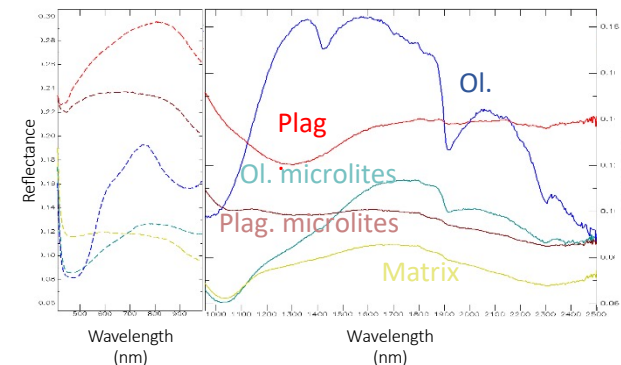
## 1) Finding time to feed the database!

- No technical staff or support for the CRPG hyperspectral lab, nor for the library
- High rate of data acquisition, especially with the hyperspectral cameras + high level of info on the sample chemistry and petrology
- Students don't commit until the end, the sci. Manager has to carry out all of the data valorization (small and young team, only the sci. Manager has a permanent position)

## 2) Varying targets (e.g., recently, development of measurements on homemade, synthetic feldspars), often requiring new keywords/categories.

Varying measurements techniques (soon to come: FTIR) → **cannot often reproduce** the architecture from one experiment to another

## 3) Developing new measurement setups (e.g., transmission for thin sections) and **still pondering the best way to extract / share the relevant information, especially from (microscopic) hyperspectral imaging** (currently: using spectra of ROIs or classes) – open to suggestions !





# Ideas for developments



## 1) Body = Mars, Mercury, the Moon

Would there be any room for a library of Mars, Mercury, Moon typical / « type » (reference) spectra, such as the MICA files of Viviano-Beck et al., 2014?

### Minerals Identified through CRISM Analysis – The MICA Files

The MICA Files is a compilation of published descriptions and type locations of unique spectral features identified on Mars by using data from CRISM. This document is intended as a primer on what planetary scientists have found so far and suggests, in brief, how to uniquely identify these minerals elsewhere on the planet. This document contains an expanded and less technical version of the information presented in [Viviano-Beck et al. \(2014\)](#). New minerals and identifications will be added periodically.

After a brief introduction, The MICA File is organized by mineral group, within which there is a 2-page standardized set of information provided about each identified mineral or phase. The "How to Read the MICA Files" is an example 2-page overview that illustrates the layout and other common aspects of the individual mineral pages.

Original spectra presented in this document can be downloaded at <http://crismtypespectra.rsl.wustl.edu/>.

