The Mirabelle database @ CRPG Nancy

👨‍🎓 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) 🇫🇷

- **Samples: natural and synthetic minerals/simulants/terrestrial rocks and meteorites** (Mars, Moon, Aubrites) which have been fully characterized in terms of petrology
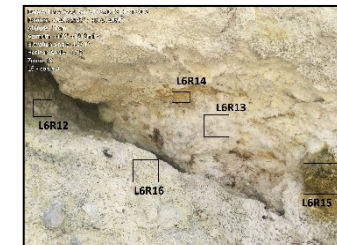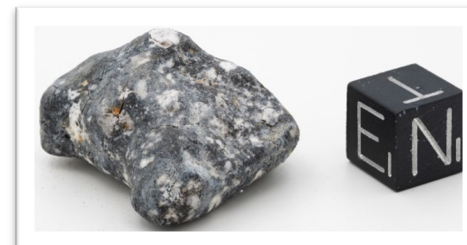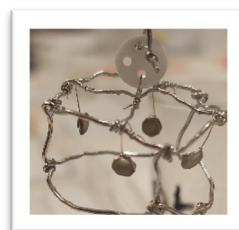
- Data: VNIR-SWIR (0.4–2.5 microns) spectroscopic data acquired with a **point spectrometer** (Fieldspec4) and **2 hyperspectral cameras** (Hyspex VNIR3000-N and SWIR640)

- 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)

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 !
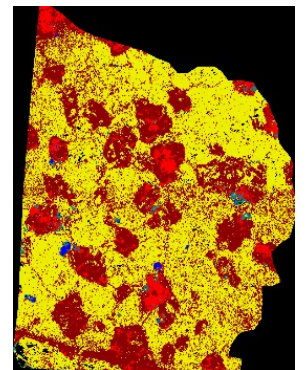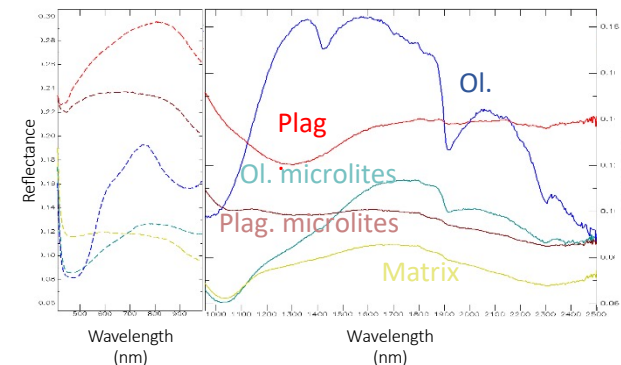
Ideas for developments

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?