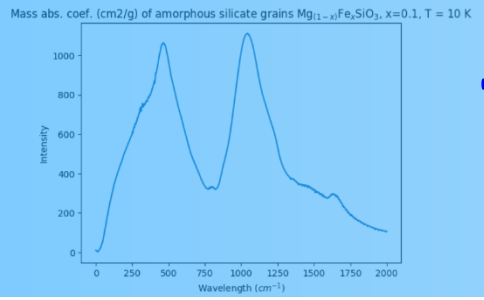
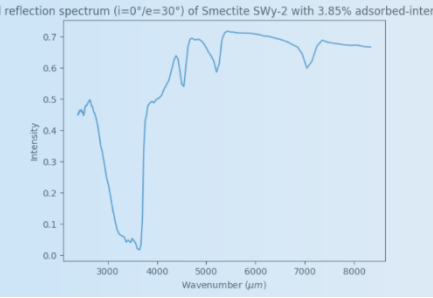



# The SSHADE database infrastructure

## for Astrophysics, Planetary sciences and Geosciences




set of databases of **spectra of solids**

**Synthetic samples, Terrestrial analogs** and **Extraterrestrial materials**

in the **electromagnetic spectrum**

➔ For analysis, modeling and Interpretation
of spectroscopic observations
**of planetary surfaces & aerosols, inter- & circumstellar grains, …**

hosted by OSUG Data Center in Grenoble, France

IPAG Institut de Planétologie et d'Astrophysique de Grenoble

OSUG Observatoire des Sciences de l'Univers de Grenoble

cnrs INSU observer & comprendre

Université Grenoble Alpes

cnes

europlanet

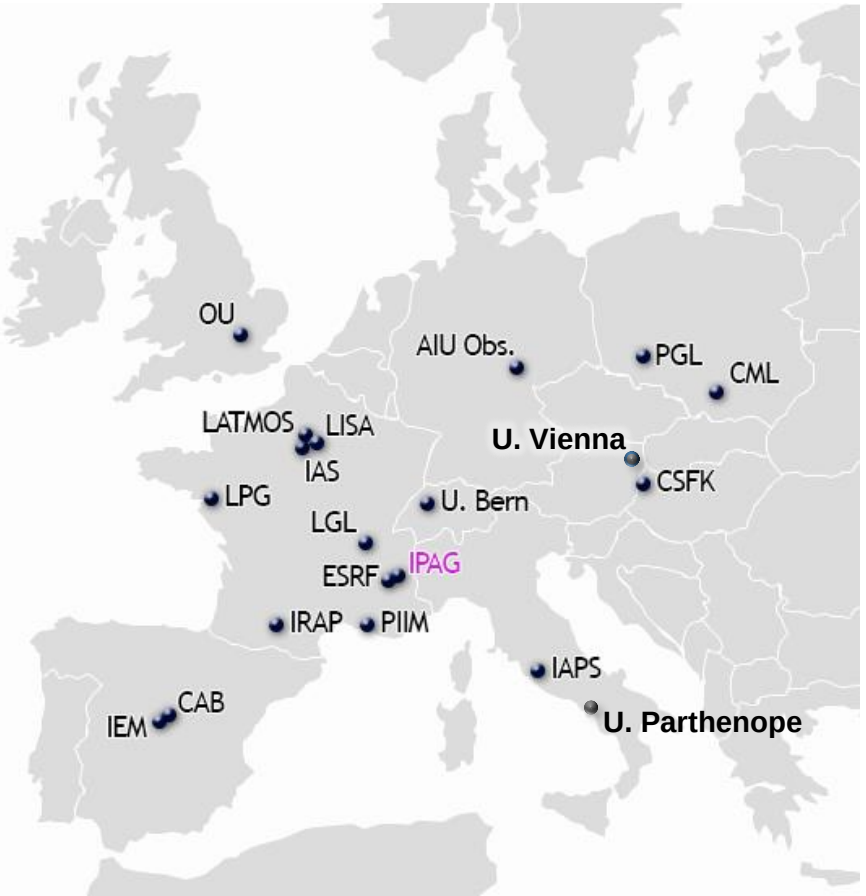
# *SSHADE* European Consortium of Data Providers

Data from **23** solid spectroscopy experimental groups
in **8** European countries (F, PL, D, GB, CH, E, I, HU) +India +Taiwan
**~75** researchers

**Each with particular expertise on:**

- some wavelength ranges
- specific techniques
- type of materials and physico-chemical conditions
- type of data and products, …

**SSHADE Wiki** : https://wiki.sshade.eu



# What data in *SSHADE* ?

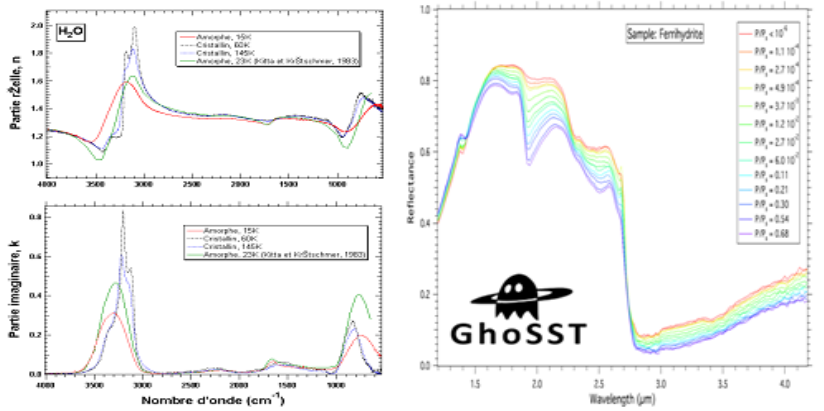
- **Spectral ranges:**
  - **from X-ray, UV, Vis, IR, mm … radio waves**

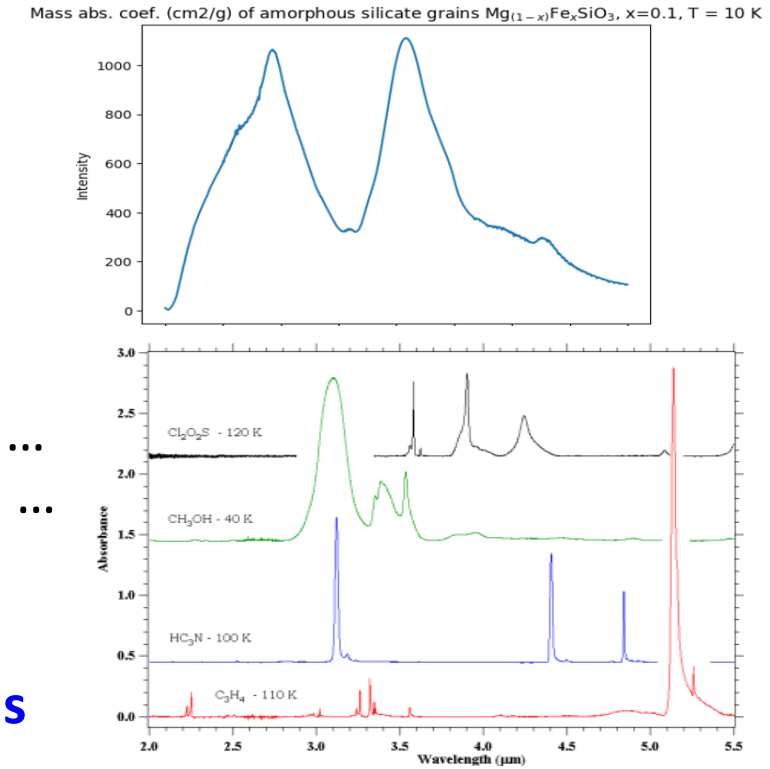
- **Solids** (naturals and synthesized)**:**
  - **Ices** (low/high T-P, mixtures, ...), clathrates hydrates, …
  - **Minerals,** rocks
  - **Organic matter,** polymers, …
  - **Extraterrestrial matter**: (micro-)meteorites, IDPs, Lunar soils ...
  - also some **liquids**

- **Data types:**

➢ **Spectra**
  - **Transmission** spectra, absorption coefficients, **optical constants** …
  - **Reflectance** spectra of surfaces, spectro-photometric functions, …
  - **Raman** spectra & micro-spectroscopy, Fluorescence, …

➢ **Bandlist** (under development.)
  - position, width, intensity, vibration modes ... **for molecular solids**



# SSHADE Web interface

**online 1st February 2018 at:**

https://www.sshade.eu

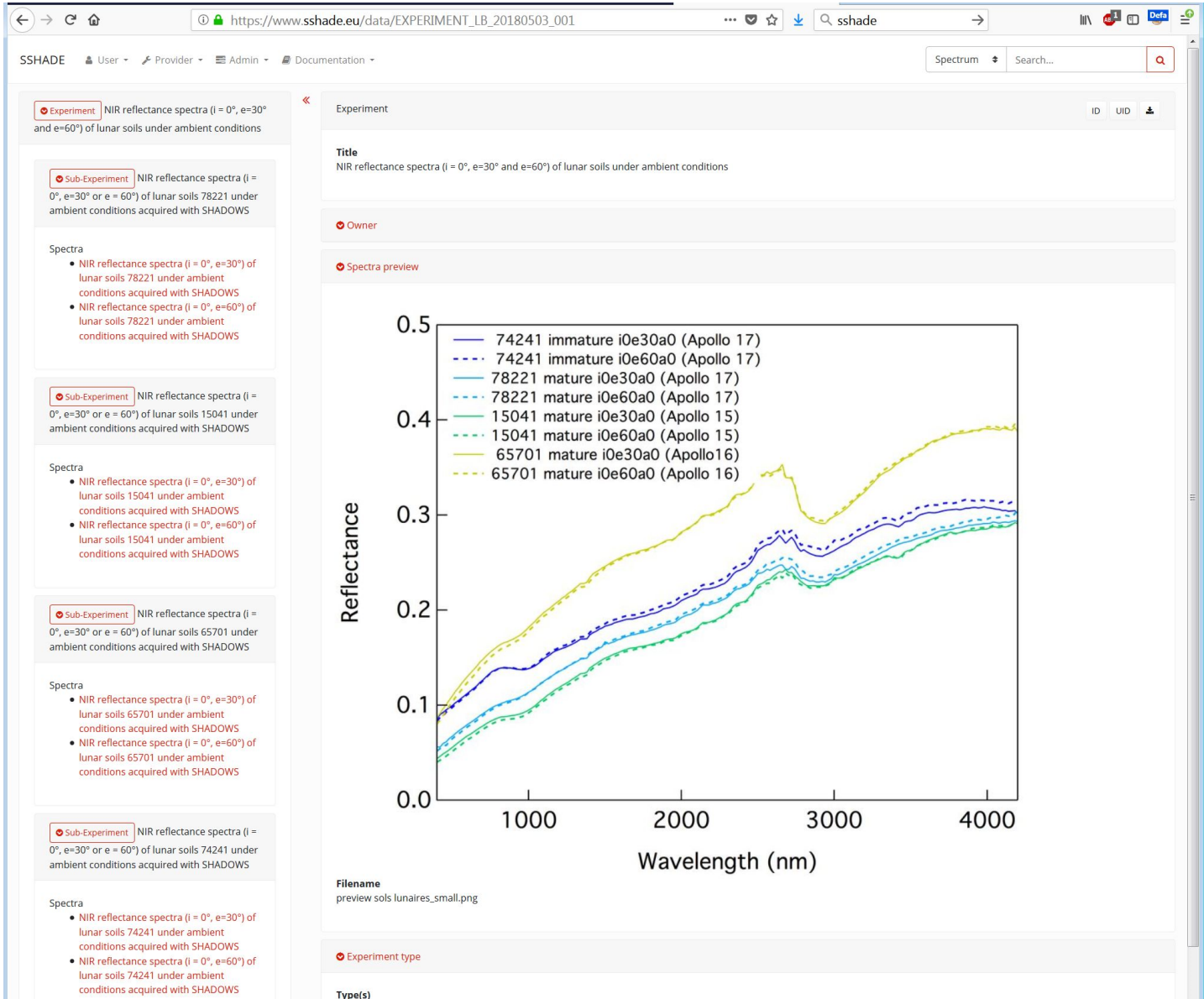
Already in SSHADE:

**12 active databases**

Over 1400 spectra from > 800 samples

**A few Lunar Vis-NIR spectra:**

- 4 soils (Apollo 15, 16, 17)
- A lunar meteorite (MAC 88105)



# SSHADE Web interface

## Search / Visualize / Export

### Search tools:

- ✓ Spectra
- ✓ Publications

### Visualize

- ✓ Experiment details
- ✓ Spectra
- ✓ Sample details

### Export

- ✓ Experiment details
- ✓ Spectra
- ✓ Sample details

# SSHADE Web interface

## Visualize

Provide very complete information on:

- ✓ **Experiment structure and parameters**
  - ➢ Spectral, spatial, angular, polarization
  - ➢ Instrument used

# SSHADE Web interface

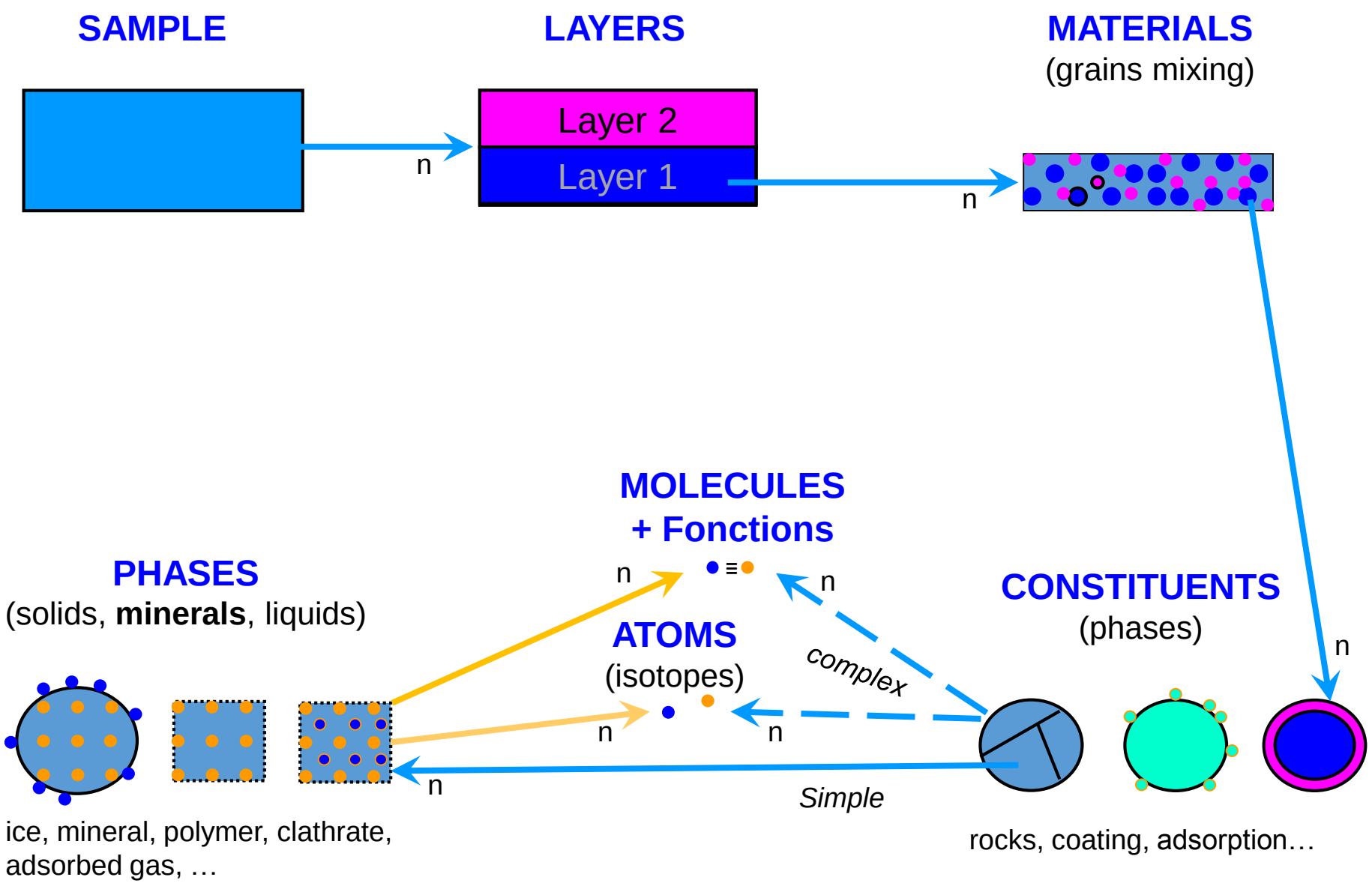
## Visualize

Provide very complete information on:

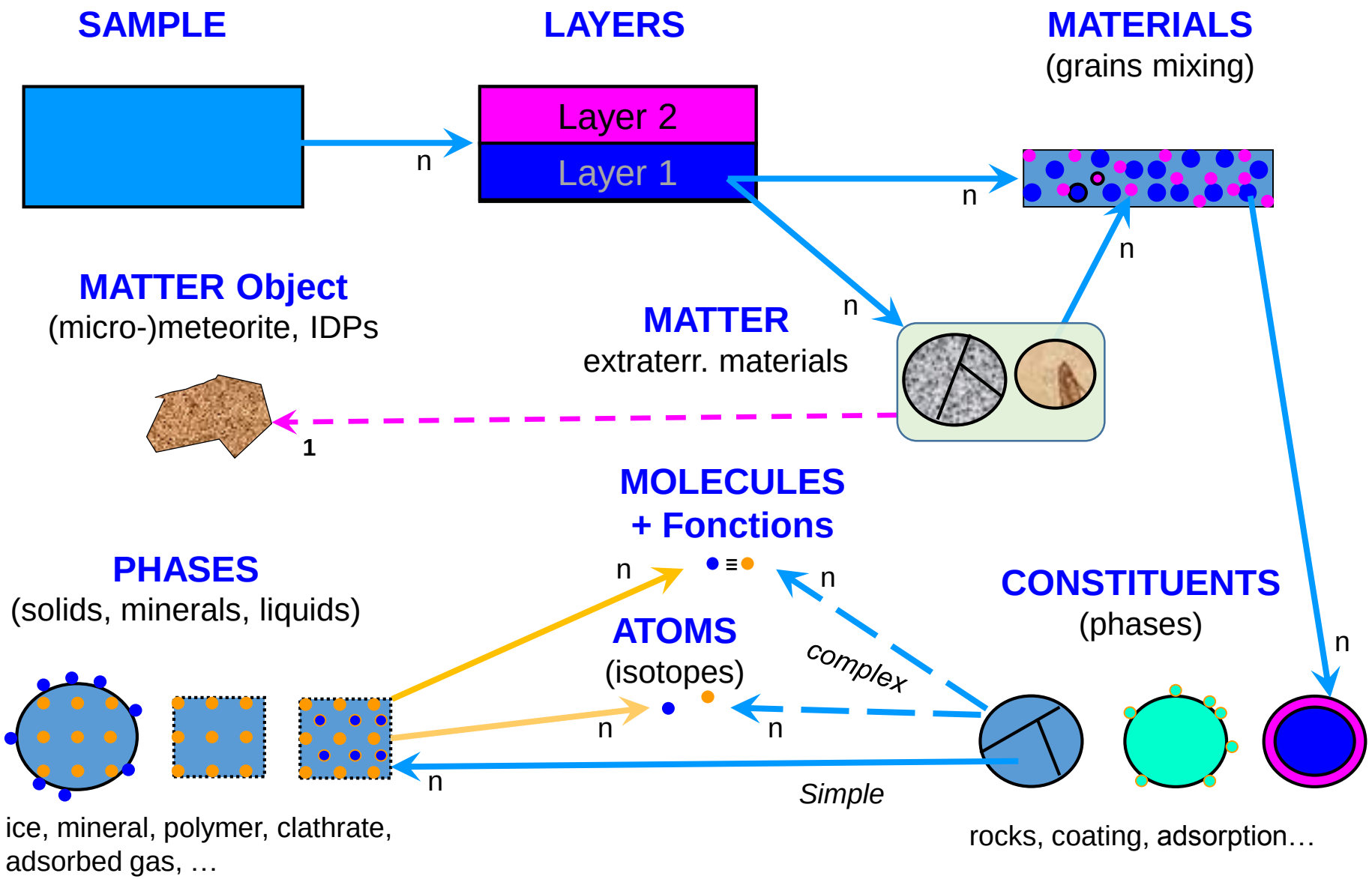
- ✓ **Experiment structure and parameters**
  - ➢ Spectral, spatial, angular, polarization
  - ➢ Instrument used

- ✓ **Sample structure**
  - ➢ composition (abundance, …), texture,
  - ➢ physical parameters (T,P, atm…) and processes (irradiation)
  - ➢ ‘object’ (meteorite)

# SAMPLE description: Layer(s) / Material(s) / Constituent(s)



# SAMPLE description: Layer(s) / Material(s) / Constituent(s)



# SSHADE Web interface

## Visualize

Provide very complete information on:

- ✓ **Experiment structure and parameters**
  - ➢ Spectral, spatial, angular, polarization
  - ➢ Instrument used

- ✓ **Sample structure**
  - ➢ composition (abundance, …), texture,
  - ➢ physical parameters (T,P, atm…) and processes (irradiation)
  - ➢ ‘object’ (meteorite)

- ✓ **Many linked info !**
  - ➢ Publications
  - ➢ Documentation, Web sites, …
  - ➢ Minerals, molecules / chemical bonds / atoms

To the limit of the knowledge of the data provider

**Scenario SSHADE demo:**

- Home page (databases)
- Search bar
- Search « Moon »
  - 2 results: 1exp w. 4 soils/8 spectra, 1 spectra meteorite
  - Preview, export
- Visu exp meteorite
- Visu spectrum: structures exp + sample
- Spectre interactif
  - Zoom, position, …
  - Change of units, log axis, download png
- Sample details: image, T, P, publi
- Matter: object
- Constituent: species

- Search « Lunar soil » ou « apollo »
  - 2 results: 4 soils/8 spectra,
- Visu Exp: structure Exp in 4 subexp (4 soils)

Scenario SSHADE demo:

- Sample 15041 Matter
  - Orginal matter: image, oxides
  - Material, constituent, mineral

Other searchs
  - Ilmenite => idem
  - Smectite => + swy*

- Filter search
  - Smectite +NIR + diff type reflectance
  - Grain size

- Export
  - Experiment (smectite grain size)
    - Dashboard
    - List of spectra
    - Contenu: data, metadata, citations