

Post-doctoral position in cosmochemistry / transmission electron microscopy

Carbonaceous asteroids under the electron microscope

We are recruiting a postdoctoral researcher with an interest in meteorites and transmission electron microscopy to study samples returned from carbonaceous asteroids by the Hayabusa2 (JAXA) and - possibly - OSIRIS-REX (NASA) space missions. These samples provide a unique insight into the materials and processes at the origin of the formation of the Solar System. The project is part of a multi-technique analysis carried out by a consortium of four French laboratories (UMET/Lille; IAS/Paris-Saclay; IPAG/Grenoble; IMPMC-MNHN/Paris) and funded by the National Research Agency programme. The aim is to describe the heterogeneity of these extraterrestrial samples at different scales in order to elucidate the role of aqueous alteration, space weathering and other processes at work. The TEM results will be coordinated with results from other groups (XCT, AFM-IR, Mossbauer, ..). Our group specialises in the methodological development for the analysis of beam sensitive materials (e.g. organics, carbonates and phyllosilicates) using direct electron detectors (DED), which have a high signal-to-noise ratio and increasingly faster acquisition rate for improved imaging, diffraction and electron spectroscopy. The focus of the study will be refined based on the nature of the sample and the interests and skills of the candidate. The funding is for 24 months with a possible extension of 6 months.

Ideally:

- You have a PhD in geosciences or materials science.
- You have experience with meteorites (or samples with similar mineralogy) and transmission electron microscopy.
- You are familiar with data analysis using Python libraries (www.hyperspy.org)

Application:

Send CV, publication list and letter of motivation to send to Corentin Le Guillou: corentin.le-guillou@univ-lille.fr

Working environment:

- Colleagues involved: Hugues Leroux ; Damien Jacob, Maya Marinova, Francisco De La Pena.
- The lab : <https://umet.univ-lille.fr/> and the microscopy center : <https://pmel.univ-lille.fr/en/>

Related publications : Leroux et al., 2023; (<https://doi.org/10.1111/maps.14101>) ; Mouloud et al., 2024; (<https://doi.org/10.1111/maps.14124>); Noguchi et al. 2023 (<https://doi.org/10.1038/s41550-022-01841-6>)