

- In the frame of the PDR FRS-FNRS project "LIFEFORMS" (is it LIFE? First Organisms or bioMorphs), a position is open for a postdoctoral researcher in the [Early Life lab](#), ULiège, Belgium.



- The LIFEFORMS project addresses the questions: *if life appeared on Mars, is it possible to preserve it and to detect it? How can we discriminate abiotic from biotic microbial traces in ancient clay-rich sediments?* The discovery of fossil microbial life on Mars would be a paradigm shift. Opening a formidable window on the possibility of extraterrestrial biospheres would have a profound impact on society by reassessing our place in the universe, as a temporary non-unique but not-lonely form of life. Ongoing or planned missions such as Perseverance 2020 (NASA) and ExoMARS 2028 (ESA) aim to discover if the conditions for prebiotic or biological evolution were met during the early history of Mars (the Noachian) and if these traces can be preserved and detected using mission instruments onboard rovers, or by future analyses of samples returned by Mars Sample Return (MSR) (NASA-ESA). The task is hard because of missions' constraints but also because of abiotic processes mimicking life or altering original biological traces. The LIFEFORMS project aims to characterize biomorphs (abiotic organo-mineral microstructures resembling life) and biological remains that could form and be preserved in the early geological records of Mars and Earth. LIFEFORMS will assess the possible preservation of traces of life and biomorphs in conditions most similar to Noachian clay-rich sediments by examining micro to nano-scale morphologies, ultrastructures and molecular compositions of early Earth fossil analogs, and by performing experimental taphonomy of modern extremophiles and prebiotic molecules. Early Earth and experimental analogues will be analyzed first with Earth lab optimal conditions, then re-examined under the simulated challenging conditions of ExoMars 2028 instruments. The results will improve the data interpretation of ongoing and future Mars missions and will also provide clues for deciphering the early record of life on Earth. Evidencing the presence or absence of fossil life on Mars will inform on the necessary and sufficient conditions for planetary habitability and for the Origin of Life on Earth and possibly on Mars and beyond. This project is conducted in collaboration with experts and members of ExoMARS instrument teams forming the international IDS ExoMARS team "Patterns" selected by ESA.
- Candidates should have a PhD degree in sciences, preferably in biology, chemistry and/or geosciences. The ideal candidates will show scientific curiosity and interest in Astrobiology and early life evolution, ability to work in collaboration, experience in geobiology (microfossils, microbial mats, fossilization processes); light and electron microscopy, Raman and FTIR micro-spectroscopy, synchrotron-XANES and -FTIR, cell cultures, and experimental taphonomy. Fellowship is competitive and allows comfortable living in Belgium. Appointment is for 1 year, renewable up to 2 times (3.5 years in total) depending on results and progress.
- Applicants should send their CV with a motivation letter and names and coordinates of two referees before April 1st 2024 to the coordinator of the project [Emmanuelle Javaux](#). A first round of selection will occur in May 2024 (starting date is flexible), but the position will remain opened until being filled.