



Two post-doctoral fellowships in Mineral Physics / Materials Science from winter 2024

The [ERC HotCores](#) project aims at reenacting key events of the history of the Earth's Inner Core in the laboratory, as Fe crystallizes at the inner-outer-core boundary, as the inner core grows and dynamically evolves to its present state, and as we see it today through the lenses of geophysical exploration. We are looking for **two post-doctoral fellows, to start work in 2024**. Both positions will be first available for 1 year and extendable for a second year, paid according to French standards for post-doctoral fellowships, including all associated social benefits.

The first position will involve **laboratory-based visco-elasticity measurements on metallic alloys** using a new apparatus that was recently delivered to the lab. The candidate will be in charge of calibrating the instrument and study the anelastic response and attenuation properties of metallic alloys as a function of applied stress, frequency, and temperature, up to the alloy's melting temperature. All measurements will be performed at ambient pressure with a custom-designed apparatus, with access to the local, staffed [electron microscopy facility](#) for characterizing the sample states prior and after the mechanical tests. Work on this project can start anytime in 2024.

The second position will be dedicated to **visco-elasticity measurements at high pressure and high temperature** using a custom-built dynamic diamond anvil cell with heating capabilities. The candidate will be in charge of installing and testing the capabilities of the instrument in the laboratory and performing the first synchrotron experiments with the instrument. Work on this project can start as of March 2024.

The working language in the laboratory can be either French or English. The position is based at the Université de Lille, in Northern France. Lille can be reached by train in 1 hour from Paris, 40 minutes from Brussels, and 1h20 from London.

Prerequisites:

We seek a highly motivated individual with keen interest in high pressure and mechanical properties experiments. Interest in deep Earth processes is a definite plus but not required. The ability to work independently on experimental developments is essential to the project. The candidates should have a strong background in either in-situ high pressure experiments, attenuation, mechanical spectroscopy, or related fields in metallurgy or mineralogy. Good command of English (written and spoken) is required. Applicants should hold a PhD degree or equivalent in Earth Sciences, Physics, Materials Science, or a related field at the time of the appointment.

Applications:

Candidates should submit, in a single pdf file, a short statement of research experience and interests, a CV including a list of scientific productions, and the names and contact information of two or three potential referees by December 15th 2023 to Prof. Dr. Sébastien Merkel (sebastien.merkel@univ-lille.fr). Review of applications will start immediately and will continue until the position is filled. Do not hesitate to contact S. Merkel for additional information and to discuss the conditions for applications; as much as possible please do so before December 15th.

Links and supplementary information:

Hosting research group at Université de Lille: <http://umet.univ-lille.fr/MTP>

ERC HotCores project: <https://erc-hotcores.univ-lille.fr/>

Project Principal Investigator, Sébastien Merkel: <http://merkel.texture.rocks/>

Local facilities at Univ. Lille: [high-pressure lab](#), [electron microscopy platform](#)