



Post-doctoral Position

Real time TEM investigations of biomineralization mechanisms in graphene liquid-cell

In the framework of a collaborative project between the MPQ laboratory and the IPGP (two research units of the University Paris-Cité and CNRS), we look for an experienced post-doc to develop new graphene liquid-cells with the view to conduct unseen liquid-phase TEM experiments on Mn mineralization processes in biological media.

We have exploited liquid-cell TEM to observe in real time the formation of manganese oxides at the surface of bacteria with the view to study the role of biofilms (i.e. exo-polymers secreted by bacteria) on biomineralization processes. (Couasnon et al. Science Advances 2020). In the continuity of this work, the goals of this post-doctoral position are to (i) develop new graphene liquid-cells using the clean room of the MPQ lab and (ii) exploit these optimized devices to further study the mineralization of Mn in biofilms and elucidate the biochemical mechanisms that governs metal(loid)s cycling on Earth. Note that this pivotal technology will be of great benefit to other liquid-cell TEM investigations performed at the MPQ lab focused on the dynamics of nanomaterials in their formation or application media. The candidate will work alongside multidisciplinary teams of chemists, physicists and biologists to fabricate graphene liquid-cell and carry out liquid-cell transmission electron microscopy experiments in complex biological environments. The project will benefit from access to the world-leading instrumentation of the MPQ lab, combining a JEOL double-corrected TEM and state-of-the-art liquid-cell TEM holders. This 18 month position will start on December 1st 2022, and will be funded by the ANR project MAMBA (monthly salary: 2250 to 3500 €, according to experience after PhD).

Requirements and qualification

- PhD in Chemistry, Materials or Earth Science, physics or biophysics.
- Experience in transmission electron microscopy (skills in liquid-cell TEM will be a major asset).
- Skills in image processing and data analysis for TEM.
- Knowledge about biomineralization of nanomaterials.

And also: Strong motivation to perform in a multidisciplinary environment, autonomy, ability to work in a team, ability to write up experimental data to publication standard, effective verbal communication skills in English (or in French).

Application

Postdoctoral candidates are welcome to contact (in English or in French) Damien Alloyeau (damien.alloyeau@u-paris.fr, MPQ Lab) and Dr. Alexandre Gelabert (gelabert@ipgp.fr, IPGP) **Before November 1st** with a cover letter, the names and contact information of reference(s), and a CV with education history and research experiences

Group at the MPQ lab: <https://mpq.u-paris.fr/?-microscopie-electronique-avancee->

Group at IPGP: <http://www.ipgp.jussieu.fr/en/gmb/geomicrobiology>