

## PhD position on experimental fossilization in paleontology/geochemistry

A PhD position on “*Chemical and mineralogical changes of calcareous shell material during fossilisation processes – an experimental approach*” is to be filled at the Institute of Geosciences at the Johannes Gutenberg-University of Mainz, Germany. This project is embedded within the framework of the DFG research unit FOR 2685 “*The Limits of the Fossil Record: Analytical and Experimental Approaches to Fossilization*” <https://www.ifgeo.uni-bonn.de/abteilungen/palaeontologie/dfg-for-2685/for-2685-the-limits-of-the-fossil-record-analytical-and-experimental-approaches-to-fossilization> .

The PhD candidate will perform controlled in vitro alteration experiments with bivalve and egg shell samples in isotopically enriched (O, Sr, Ca, Zn, Mg) aqueous solutions to quantitatively assess fossilization processes of these calcareous hard tissues. The diagenetic alteration processes and their chemical, mineralogical and histological effects, both on the carbonate and organic matrix, will be monitored from the macroscopic down to the nanometer scale using a concert of analytical techniques such as Raman spectroscopy, XRD, MC/LA-ICP-MS, OES, clumped isotopes, CF-IRMS, electron microprobe and SEM. The aim is to gain a better mechanistic understanding of the fossilization processes at low temperatures (30-90 °C) and assess the resilience of environmental and ecological isotope proxies in shell material against alteration in fresh water and marine taphonomic settings.

### Candidate profile:

- Master degree (above average grade) in geosciences, material sciences, or a related field.
- Outstanding motivation and enthusiasm as well as a broad scientific background in geochemistry/mineralogy is fundamental and a strong interest in paleontology is necessary.
- Experience in some of the analytical techniques given above is desirable.
- Passion for careful experiments including chemical and mineralogical analyses is required as well as the evaluation and interpretation of a variety of mineralogical and geochemical data.
- Ability and willingness to conduct lab work and experience with data analysis and statistical methods
- Computer literacy, specifically skilful use of MS office packages, graphics software etc.
- Ability to work independently, but also within an interdisciplinary research team are paramount.
- Basic knowledge of paleoclimatology, paleoecology and in vertebrate biology
- Very good written and oral communication skills are required.
- Writing of publications in English for peer-reviewed scientific journals is expected.

The position will be for a fixed term for a maximum of **3 years**. Earliest anticipated start is **1<sup>st</sup> of July 2023**. Salary and benefits are according to the salary level **E13 TV-L (50% position)**. The place of employment will be at the Johannes Gutenberg-University of Mainz, Germany. Some analyses will take place at the University of Bonn as well as in other collaborating institutions.

We are looking for an enthusiastic person, who will be working in an inspiring, multi-disciplinary research team of palaeontologists and geochemists in close collaboration with members of the FOR 2685. The PhD candidate will be jointly supervised by Prof. Dr. Thomas Tütken and Prof. Dr. Bernd Schöne at the University of Mainz.

Your application should include: (1) letter of motivation, stating why you apply and your research interests, (2) curriculum vitae, (3) degree certificates, (plus English or German translation) including an explanation of the scoring system, (4) MSc thesis and/or publications (if applicable), (4) contact details of at least two referees. Please submit your application before **8<sup>th</sup> June 2023** via e-mail as a **single PDF** file to Prof. Dr. Thomas Tütken ([tuetken@uni-mainz.de](mailto:tuetken@uni-mainz.de)). The call is open until the position is filled. For further information contact Prof. Dr. Thomas Tütken.