

PhD Studentship in Organic GeoChemistry: Novel molecular proxies to reconstruct past environmental change.

A fully funded 3.5 years PhD studentship is available in the Organic Geochemistry Unit (<https://www.bristol.ac.uk/chemistry/research/ogu/>), where you will work with Dr. B.D.A. Naafs, starting in September 2024.

Introduction

Every cell of every organism on Earth, from the simplest microbe to complex humans, contains an outer membrane that mediates its relationship with the environment. These membranes are largely made of lipids and these lipids can be preserved as molecular fossils for over a billion years in sediments. The distribution (and stable isotopic composition) of these molecular fossils has been crucial in constraining the evolution of life, the evolution of the climate system and biogeochemical (e.g., carbon) cycles, and the environment. For example, the climatic information preserved in organic paleothermometers from across the geological past is fundamental to benchmark and validate climate models used by the Intergovernmental Panel on Climate Change (IPCC) to simulate future climate scenarios. In addition, membrane lipids are widely used in industry and pharmaceutical applications, for example in drugs delivery. Research into membrane lipid dynamics is therefore a priority across disciplines and directly links to key-scientific priorities such as the environment, climate change, microbial adaptation, digital data, and health.

Project description

As part of this project, you will develop novel biomarker proxies, based on bacterial membrane lipids, to reconstruct environmental change in the geological past. You will use the membrane lipids present in environmental samples as well as microbial culture studies to develop these calibrations. You will test their application using well-known past periods of environmental change, such as the deglaciation and the Paleocene Eocene Thermal Maximum (PETM).

Application

We welcome and encourage student applications from under-represented groups. We value a diverse research environment. Applicants must have obtained, or be about to obtain, a degree in Chemistry, Earth Sciences, Biology, Geography or related STEM areas.

We encourage you to make an informal enquiry to Dr David Naafs (David.naafs@bristol.ac.uk) if you have any queries or would like to discuss details of the project.

Funding Notes

Funding is available for UK applicants and EU citizens with settled status. International applicants from other countries are also considered.