Cadmium isotope signatures in marine sediments: Advancing the paleo-proxy

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Project Description:

The isotope composition of cadmium in marine sedimentary deposits may record changes in primary productivity, oxygenation, and organic carbon burial in ancient oceans. In order to accurately interpret the chemical composition of ancient sediments, however, the behaviour of cadmium during its burial into sedimentary systems needs to be understood.

This 3.5 year fully funded studentship is part of the UKRI-supported ERC Consolidator project ‘Disentangling the role of organic feedbacks on the global carbon cycle (DISTILL),’ which aims to use inorganic isotope geochemistry to trace Earth’s ancient organic carbon cycle. You will investigate how the isotopic composition and distribution of Cd in modern marine sediments changes during burial.

Training

You will be trained how to make isotopic measurements of sediments, minerals and fluids, and how to trace element distributions using Scanning Electron Microscopy, laser-ablation ICP-MS and nanoSIMS elemental mapping. Cadmium speciation will be determined using RIXS and HERFD techniques at the Grenoble synchrotron to better constrain the measured isotopic compositions. Your research will underpin efforts by the DISTILL project team to use Cd as a tracer of the organic carbon cycle. You will be embedded in the new Royal Holloway Centre of Climate, Ocean and Atmosphere with the chance to interact and learn from researchers studying in related fields. The studentship covers home (UK) fees, 3.5 years stipend at UKRI rates, and full research expenses.

You should have a background in Earth Sciences, Physical Geography or Chemistry and be interested in isotope geochemistry and environmental change.

Applications should only be made via Royal Holloway Direct (not by email) (https://admissions.royalholloway.ac.uk) and include: a cover letter stating your motivation to apply for this particular project, your C.V., academic transcript(s) and the names of two academic references.

The closing date for applications is 5pm on the 10th March 2023.

The studentship is available to start from September 2023.

We welcome and encourage applications from women and underrepresented minorities.

For an informal discussion about the project, please contact alex.dickson@rhul.ac.uk.