Fully Funded PhD Studentship

Genesis of Cu-Co Mineralisation in the World-Class Tenke–Fungurume Mining District, Central African Copperbelt

Department of Earth Sciences, Durham University, UK

Supervisors: Dr Lingli Zhou, Prof David Selby, Prof Ken McCaffrey

Project Start Date: 1 October 2026

Project Overview

Copper and cobalt are essential metals for electrification, renewable energy technologies, and battery supply chains, making understanding their geological enrichment processes increasingly important for supporting the global energy transition.

The Central African Copperbelt (CACB), extending across the Democratic Republic of the Congo and Zambia, hosts the world's largest sedimentary rock-hosted cobalt resources and one of its most important copper provinces. Within this region, the Tenke–Fungurume Mining District (TFM) represents one of the largest and most metal-endowed Cu-Co districts globally and is responsible for a substantial proportion of global cobalt production.

Despite decades of exploration and mining, fundamental questions remain regarding the origin of the exceptional copper and cobalt enrichment at Tenke–Fungurume. In particular, the relationships among sedimentary architecture, structural evolution, fluid migration, and mineralisation remain incompletely understood.

This fully funded PhD project will investigate the geological processes responsible for Cu-Co mineralisation within the Tenke–Fungurume Mining District through an integrated programme of field geology, drill-core studies, mineralogy, geochemistry, isotope geochemistry, and geochronology.

Research Objectives

The project will address several key scientific questions:

- What lithological and stratigraphic factors control the distribution of copper and cobalt mineralisation?
- How did faulting, folding, and evaporite-related deformation influence fluid flow and metal accumulation?
- Were copper and cobalt introduced during the same mineralising event or during multiple stages of mineralisation?
- What is the timing of mineralisation relative to basin development and tectonic deformation?

- What geological processes produced one of the world's largest sediment-hosted Cu-Co districts?

Research Approach

The successful candidate will undertake a multidisciplinary study involving:

- Geological mapping and drill-core logging;
- Sedimentological and stratigraphic analysis;
- Structural geological investigation;
- Optical petrography and scanning electron microscopy (SEM);
- Mineral chemistry using EPMA and LA-ICP-MS;
- Re-Os, U-Pb, and Lu-Hf geochronology;
- Integration of geological, geochemical, and geochronological datasets into a district-scale mineral systems framework.

The project will benefit from access to world-class analytical facilities at Durham University and extensive geological datasets from one of the world's premier copper-cobalt districts.

Training and Development

The student will receive advanced training in:

- Economic geology and mineral systems analysis;
- Sedimentary basin evolution;
- Structural geology;
- Ore deposit mineralogy and petrography;
- Isotope geochemistry and geochronology;
- Scientific communication and data integration.

The project provides an excellent opportunity for students interested in pursuing careers in mineral exploration, mining, critical minerals research, geoscience consultancy, or academia.

Candidate Requirements

Applicants should hold, or expect to obtain, at least a 2:1 Honours degree, Master's degree, or international equivalent in Geology, Earth Sciences, or a closely related discipline.

We particularly welcome applicants with interests or experience in:

- Economic geology and critical mineral resources;
- Sedimentology and stratigraphy;
- Structural geology;
- Geochemistry;
- Geochronology;
- Mineral exploration.

Previous research experience through undergraduate or Master's projects, internships, or industry placements will be advantageous but is not essential.

Funding

This is a fully funded four-year PhD studentship for eligible **Home** students.

The studentship includes:

- Full tuition fee coverage;
- Annual tax-free stipend at the UKRI rate (currently £20,780 for 2025/26, subject to annual increases);
- Research and training support.

How to Apply

To apply, please submit:

- A CV;
- Academic transcripts;
- A cover letter outlining your suitability and motivation for the project;
- Contact details for two academic referees.

Application deadline: 26 July 2026

Interviews (online): 14 August 2026

For informal enquiries about the project, please contact:

Dr Lingli Zhou
Department of Earth Sciences
Durham University/Vrije Universiteit Amsterdam
Email: lzhouearth@gmail.com

For further information about the Department of Earth Sciences at Durham University, please visit the departmental website:
https://www.durham.ac.uk/departments/academic/earth-sciences/