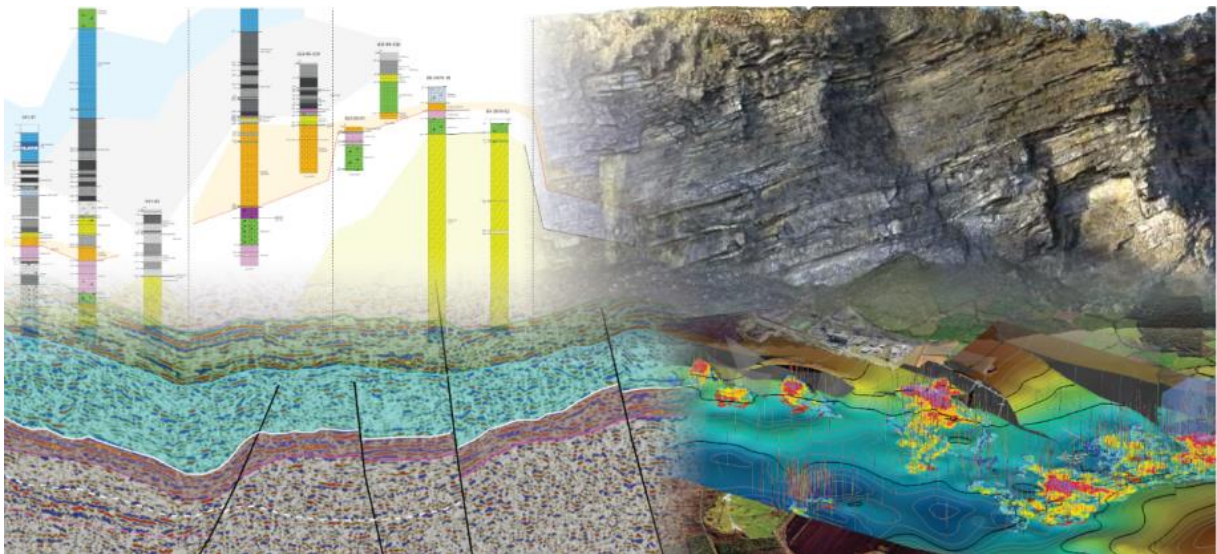


*Fully funded PhD opportunity*

## **Tectono-stratigraphic evolution of complexly faulted basin margins in the Irish Carboniferous**

*School of Earth Sciences at University College Dublin (UCD)*

*Irish Centre for Research in Applied Geosciences (iCRAG)  
Fault Analysis Group, UCD*



### **About the project**

This PhD project will investigate the tectonostratigraphic framework and basin evolution near basin-bounding faults systems in the Irish Mississippian, and link this to the development and distribution of suitable carbonate host rocks for earth resources along the basin margin (such as base metal mineralisation, geothermal, groundwater).

It will do this using an integrated methodology combining reflection seismic interpretation, 3D geological modelling, detailed lithological logging, petrophysical characterisation of diamond drill-cores, interpretation of multi-physics potential field datasets, and geophysical inversion.

The insights of this study will contribute to our understanding of faulting and sedimentation patterns along large and complex basin-bounding faults, which have been shown to be strongly influenced by internal fault complexities, differential uplift-down-throwing along-strike, and by fault scarp degradation processes. The outputs of this project will provide improved constraints on targets for mineral exploration and deep geothermal reservoirs, and it will therefore contribute to de-risking investments in these areas.

The successful candidate will be enrolled for a 48-month Structured PhD programme at UCD, under supervision of [Dr Koen Torremans](#). You will join a large team of researchers at the [UCD School of Earth Sciences](#), and join [iCRAG](#), the Irish Centre for Research in Applied Geosciences who are creating solutions for a sustainable society. You will join a diverse group of researchers, and we welcome applications from a diverse set of backgrounds.

While carrying out research you will receive develop transferable skills, and critical technical skills in several methodologies, many of which are highly sought after by employers. The research project will use the large and high-quality drillhole and reflection seismic datasets maintained at UCD/iCRAG. An integrated methodology will be applied to several interlinked sub-study areas within the larger study area:

- Reflection seismic interpretation, and 3D geological modelling, building on regional interpretations, using a suite of workflows, codes and software in our labs.
- Detailed lithological and lithofacies logging of historical and current mineral exploration boreholes along key sections across the margins. Detailed petrological work (transmitted light microscopy, desktop SEM on thin sections) will constrain the lithologies.
- Integration of visual logging with VIS, SWIR spectral data, XRF data, new and existing petrophysical data, and downhole wireline log data. Constrained and unconstrained classification algorithms will be used to identify co-variance.
- Multi-geophysics interpretation and geophysical inversions will be carried out and compared with seismic and borehole data, using petrophysical data as a guide.

Throughout the project, the PhD researcher will collaborate and interact with industry partners in the geothermal and mineral resources industry, and with the Geological Survey Ireland.

**Applicant profile:**

- You should have a keen interest in the interplay of sedimentology, structural geology, and earth resources. You will need a strong background in at least one of these, with a degree in a related discipline.
- An MSc or equivalent by experience is desirable but not required.
- A keen interest in collaborating with or previous exposure to any industry related to earth resources, for example the hydrocarbons, mineral exploration or geothermal industry, would be considered an advantage.
- You will need proof of oral and written competence in the English language to be admitted to UCD ([details here](#)).

**Start date:** 1 January 2023, an earlier date may be feasible from September 1<sup>st</sup> 2022 onwards.

**Interested? How to apply:**

To apply, please submit a CV and cover letter (electronic format) to Dr Koen Torremans ([koen.torremans@ucd.ie](mailto:koen.torremans@ucd.ie)). This should include your motivation to apply, explaining why you are a good fit for this project, and how you see your career progress. Please include contact details of two referees. Informal requests can be made to Koen Torremans.

Review of applications will begin on August 19<sup>th</sup> 2022, and continue until the position is filled.

**Funding provided**

This is a funded scholarship for 4 years, funded by iCrag, the SFI Research Centre in Applied Geosciences. This scholarship covers university tuition fees, an annual tax-free stipend of €18,500, and a project-specific research grant covering research expenses, conferences and training needs. We encourage applications from across the world.

**Equality, diversity, and inclusion**

UCD is committed to creating an inclusive environment where diversity is celebrated, and everyone is afforded equality of opportunity. To that end the university adheres to a range of equality, diversity and inclusion policies. We encourage applicants to consult those policies here <https://www.ucd.ie/equality/> . We welcome applications from everyone, including those who identify with any of the protected characteristics that are set out in our Equality, Diversity and Inclusion policy.

**More information:**

The University: <http://www.ucd.ie/aboutucd.htm>

College of Science: <https://www.ucd.ie/science/>

School of Earth Sciences: <https://www.ucd.ie/earthsciences/>

iCrag: [www.iCrag-centre.org](http://www.iCrag-centre.org)