

## SEparating Critical metals ThROugh mineRAL crystallization (SEleCTOR)

The Department of Geology at Trinity College Dublin, Ireland, seeks **two Ph.D. students** for a 4-year study into the separation of critical metals through mineral crystallization.

### Project description

SEleCTOR will develop novel, clean and cheap protocols to separate rare earths from wastewaters. Rare earths (e.g., lanthanum, cerium, neodymium, europium) are indispensable elements for smart technology and their utilisation is a key economic indicator. However, their supply is at risk in the medium term (2020-2030) because their demand is steadily increasing, and their separation requires inefficient, expensive and environmentally aggressive extraction methods. We will design functionally engineered nanoparticles with targeted structures, sizes, morphologies and surface properties that will control the selective capture of specific rare earths from water. This will decrease water contamination and reduce Ireland's reliance on energy imports.

### Person specification

Applications are invited from students who can demonstrate a solid background in geochemistry and mineralogy. Passion for laboratory work and keen interest and self-motivation for solving problems is essential. Candidates must have an excellent, relevant geoscience honours degree. The project is fully funded for four years with a stipend of 18.5k per annum, includes fees for EU applicants, and has a **projected start date of 1<sup>st</sup> September 2020**. Note that applicants must have been resident in a EU member state for 3 out of the last 5 years to be eligible for EU fees.

The PhD students will be based at Trinity College Dublin (Geology Department, School of Natural Sciences), but they will also be required to travel to present results at international conferences or other meetings, as well as to participate in outreach activities, some of them in conjunction with the Centre for Research in Applied Geosciences (iCRAG).

**To apply, please send a full CV, a covering letter stating why you would be ideal for this project, and the names and contact details of two academic referees to Dr Juan Diego Rodriguez-Blanco, [rodrigid@tcd.ie](mailto:rodrigid@tcd.ie)**

**The closing date for applications is **June 30<sup>th</sup> 2020**.**

Enquiries for further details are also welcome to the contact email above.

### Contact information

Dr. Juan Diego Rodriguez-Blanco  
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## Trinity College Dublin

Founded in 1592, Trinity is at the nexus of tradition and innovation, offering undergraduate and postgraduate programmes across 24 schools and three faculties: arts, humanities, and social sciences; engineering, maths and science; and health sciences. Spread across 47 acres in Dublin's city centre, Trinity's 17,000-strong student body comes from all 32 counties of Ireland, and 16% of students come from outside the country. Of those, 40% are from outside the European Union, making Trinity's campus cosmopolitan and bustling, with a focus on diversity.

Further details of the Geology Department, the School of Natural Sciences and Trinity College Dublin can be accessed at:

<http://www.tcd.ie/Geology/>

<http://naturalscience.tcd.ie/>


<http://www.tcd.ie/>

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**Science Foundation Ireland (SFI)** is the national foundation for investment in scientific and engineering research. Science Foundation Ireland funds research in the areas of science, technology, engineering, and mathematics (STEM) which promotes and assists the development and competitiveness of industry, enterprise and employment in Ireland.

**Geological Survey Ireland (GSI)** is the national Earth science knowledge centre of Ireland. GSI provides data and maps on Ireland's subsurface and act as a research collaborator.

**The Environmental Protection Agency (EPA)** is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. It operates independently under the Department of Communications, Climate Action and Environment



**iCRAG**  
IRISH CENTRE FOR RESEARCH  
IN APPLIED GEOSCIENCES

The PhD students will also join the SFI Irish **Centre for Research in Applied Geosciences (iCRAG; <https://www.icrag-centre.org/>)**. The Irish Centre for Research in Applied Geosciences (iCRAG) brings together Ireland's leading geoscience experts to work on developing safe and secure groundwater supplies, discovering mineral and aggregate deposits, de-risking oil and gas exploration, safeguarding the geomarine environment, protecting from Earth's hazards, and educating and informing the public on geoscience-related issues.