Petrogenesis of Li-rare metal pegmatites associated with the Leinster granite, Ireland

The 405 Ma Leinster granite of southeast Ireland is one of the world’s largest two-mica granite batholiths, covering ~2,700 km². Minor intrusions of spodumene pegmatite, partially greisenized to Li-muscovite pegmatite, were emplaced into an active shear zone during intrusion of the Leinster granite; they are presumed comagmatic with a component of the batholith. Previous studies, both academic and linked to mineral exploration, have demonstrated Li₂O grades that commonly exceed 2 wt. %, as well as significant enrichments in Rb, Cs, Ta, Nb and Sn.

The project aims to constrain the magmatic and hydrothermal-magmatic petrogenesis of the pegmatites and constrain the processes that have led to their enrichment in lithium and rare metals. The main approaches will be high precision geochronology, radiogenic isotope and chemical analysis, founded on detailed petrography. There will be an opportunity to extend the study to a similar deposit in Brazil where the collaboration of a mining or mineral exploration company can be obtained, e.g. Volta Grande.

The research will be mainly lab-based at the National Centre for Isotope Geochemistry in UCD. Techniques may include optical and SEM imaging for petrographic analysis, electron microprobe analysis, TIMS U-Pb mineral geochronology, MC-ICP-MS trace element analysis, Sr-Nd-Pb isotope analysis and Rb-Sr geochronology.

We are seeking applicants with a good honours BSc or MSc degree in Geology or Geochemistry. Research experience on related rocks, or in any of the above analytical techniques, would be a distinct advantage but is not essential. If you are interested in this project, please email Dr Julian Menuge (j.f.menuge@ucd.ie) for more information. In order to apply, you will need to supply your CV, the names and email addresses of three referees and a transcript showing the grades or marks obtained in your university courses.