

iCRAG Ph.D. studentship HC4.2PhD13

Geochemical tracers of cementation and carbonate reservoir quality

The Department of Geology at Trinity College Dublin, Ireland, and the Irish Centre for Research in Applied Geosciences seek a Ph.D. student for a 4-year study into the geochemistry of the cements within the basins of the Irish Atlantic Margin.

The Irish Atlantic Margin is one of the few remaining, largely unexplored, frontier petroleum exploration areas in Europe. The Porcupine and Slyne basins predominantly consist of mixed siliciclastic units with carbonate cements, limiting the value of bulk observations and geochemistry. Thus, fundamental questions regarding the chemistry, source, and timing of cement formation within the Triassic and Jurassic reservoirs remain unanswered: To what extent does diagenesis of these sandstones impact reservoir behavior and are the cements controlled by primary mineralogy? What controls the patchy distribution of the common late-stage ferroan carbonate cements in these basins? And, why are some cements void-filling and others are destructive, replacing previous mineralogy? Answering these questions is a crucial step in being able to make reservoir quality predictions in these and neighbouring basins along the Atlantic Margin. Our work will establish a framework for reservoir geochemistry in the Triassic and Jurassic reservoirs within the Slyne and Porcupine Basins, using high-resolution cathodoluminescence imaging, elemental and isotope geochemistry, and cutting-edge synchrotron techniques. Our objective is to quantify the cement chemistry, and to determine the timing of cementation and the relationship of cements to reservoir quality.

An outstanding student with strong interests in sedimentology, petroleum exploration and/or biogeochemistry is sought. Applicants should have a convincing motivation for research and be able to demonstrate ability to work quantitatively with elemental budget models. Applicants should ideally possess an upper class relevant geoscience honours degree or equivalent qualification. A Masters level qualification in related area would also be desirable. The researcher will be based within the Sedimentology Research Group at Trinity College Dublin.

The project includes a tax-free stipend of €18,000 per annum and EU level fees. Note that applicants must have been resident in an EU member state for 3 out of the last 5 years to be eligible for EU fees. The studentship is due to start before **1st January 2017**. The project is part of the [iCRAG programme](#). iCRAG is funded under the SFI Research Centres Programme and is co-funded under the European Regional Development Fund. Interested candidates should send a 3-page CV, names of two academic referees and a covering letter explaining their interest in this research topic to the contact address below. Evaluation of applications will begin on **26th September 2016**. Inquiries for more details are welcome.

Dr. Catherine Rose
Department of Geology
Museum Building
Trinity College, Dublin 2, Ireland
Email: crose@tcd.ie Tel: +353-1-896 1165

