



## **Coupling colour CL of quartz with multiple geochronological proxies in an attempt to determine extent of sediment recycling in Devonian and Mesozoic basins of southern Ireland**

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Detrital zircon, mica and apatite ages from samples in the Lower Devonian Dingle Basin, the Middle to Upper Devonian Munster Basin and the Triassic to Cretaceous basins of the southern Irish offshore (North Celtic Sea, Fastnet and Goban Spur basins) indicate the potential of multiple cycles of sedimentation. However, this evidence is somewhat inconclusive and it remains a challenge to determine whether grains have been derived directly from the ultimate source or from recycling of older sedimentary rocks. Distinguishing between direct derivation of sediment and sediment recycling has important implications for prediction of sandstone maturity and hydrocarbon reservoir potential. Cathodoluminescence (CL) colour of quartz has, in the past, been used to determine the source of quartz in sandstones. However, the major concern for such an application is that there is large overlap of colours from different sources. In the present study, we hypothesise, based upon existing geochronological and petrographic evidence, that the Upper Devonian Munster Basin sedimentary rocks were recycled during Mesozoic times into the southern Irish offshore basins. In order to test this hypothesis, we compare the relative proportions of different CL colours in quartz from potential sedimentary sources (i.e. the Devonian Dingle and Munster basins), with those from Mesozoic offshore basins of southern Ireland. Similarity between relative proportions of quartz CL colours in these basins suggests recycling of sediments into the offshore basins during the Mesozoic.