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Chemostratigraphy and geochemical vectoring at the Rapla prospect, Rathdowney Trend, Ireland

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Zinc-lead mineralisation within the Irish Lower Carboniferous can be subdivided between deposits forming on either palaeozoic basin margin. Those on the southern side, known as the Rathdowney or Lisheen trend deposits, are hosted within the Waulsortian Mudbank formation [1] and have produced over 35Mt of massive sphalerite-galena-pyrite ore since the 1960's. Additional occurrences of Irish-style mineralisation along the Rathdowney trend are numerous [1], however, questions remain regarding the formation and geochemical signature of the alteration products, sufficiently understanding them to be confidently utilised for blind deposit exploration.

Preliminary results from Rapla, an exploration prospect 15km northeast of the now-closed Lisheen mine, show that unaltered stratigraphy can be geochemically distinguished on bulk 4-acid ICP-AES/MS data of 327 samples, thus a chemostratigraphic sequence be derived from Ca, Mg, Al wt% and TREE concentrations. Regional dolomitisation and Black Matrix Breccia (BMB) are respectively distinguishable by their Mg concentrations (wt%), and the Ga and LREE traces concentrations in an order of magnitude of ppm.

Fe and Mn have historically been used within mining camps to vector to mineralisation however this distribution is stratabound and limited to a few hundred meters. New elements are presented which correlate to Irish-type mineralisation distally.

This is the first prospect to be analysed within the Rathdowney trend of zinc deposits. These observations will be tested on further work on a number of the Lisheen and Galmoy ore bodies and additional prospects along strike. In addition the whole rock geochemical signature will be coupled with an in-situ microanalytical study to replace the trace geochemical trend in the general paragenetic sequence, and understand the elemental transfers at all scales.

References:

[1] Hitzman M and Beaty D (2003) In: *Europe's Major Base Metal Deposits*: IAEG, 499-531