U-Pb geochronology of Fe-oxides: LA-ICP-MS and SHRIMP analysis

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High U-bearing hematite (Hm; up to few wt.% U) from the Olympic Dam IOCG deposit (OD; South Australia) was used as a Pb-Pb geochronometer [1] to give ages of 1590±8 & 1577±5 Ma via LA-ICP-MS using GJ-1 zircon as a primary standard. An Fe-oxide matrix matched standard is required if the method is to be routinely applied to estimate the timing and duration of mineralising events. Here, we employ SHRIMP analysis to check isotopic homogeneity of dated Hm [1] as well as for low-U, high-W Hm (hundred ppm U; 1-2 wt.% W) with comparable oscillatory zonation patterns as those reported for the high-U type [1].

The first SHRIMP analysis here shows certain grains of both Hm types as isotopically homogeneous (e.g., Fig. 1), providing confidence that a natural standard can be identified from OD material. The next step is to measure absolute U/Pb isotopic values using ID-TIMS on homogeneous areas in grains assessed by SHRIMP and extracted using a micro-drill.

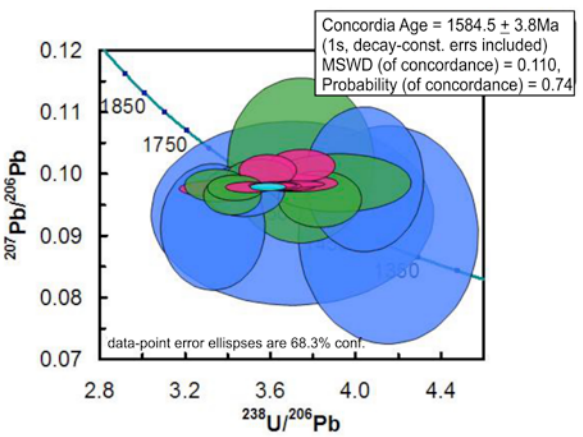

Fig. 1: SHRIMP U/Pb concordia plot for low-U hematite

[1] Ciobanu *et al*. (2013), *Precambr. Res*. **238**,129-147.