Fe-isotope systematics in the Renison Sn deposit, Tasmania

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Recent studies of magmatic-hydrothermal skarn deposits [1,2] have investigated the use of Fe-isotopes to trace fluid sources. The authors conclude that the isotopically light composition of ore minerals, compared with intrusive stocks, support Heimann *et al*'s (2008) model of Fe(II)-bearing exsolved ore fluids being isotopically lighter than the source magmas.

Our results for minerals from the world class Renison Sn deposit do not support the theory that the first minerals deposited from a magmatic-hydrothermal solution are isotopically lighter than the source pluton (Fig1). We contend that our results are consistent with previous ^{18}O and H/D work [4] suggesting that the ore-forming fluid equilibrated with the granite prior to ore formation.

Apparent fractionation factors between mineral pairs yield fluid temperatures broadly consistent with fluid inclusion work [4,5], but are spatially inconsistent with ^{18}O and ^{34}S isotope models of fluid evolution [5]. *In situ* analysis of mineral pairs may help to resolve fractionation processes at the mineral scale.

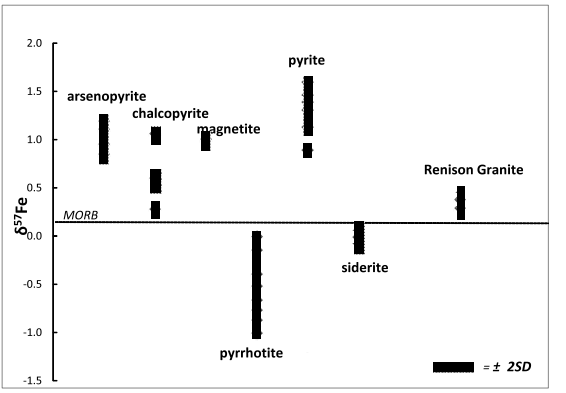

Figure 1. $\delta^{57}Fe$ compositions in per mil for magmatic-hydrothermal minerals and host granite from the Renison Sn deposit.

[1] Wang *et al* (2011) *Ore Geology Reviews* **43** 194-202. [2] Cheng *et al (*2014) *Gondwana Research* **in press.** [3] Heimann *et al* (2008) *Geochem Cosmochim Acta* **72** 4379-4396. [4] Patterson *et al* (1981) *Econ Geol* **76** 393-438. [5] Kitto (1994) *Unpublished PhD Thesis*.