REE signatures of accessory minerals from Iron Oxide Copper Gold - skarn mineralization, Hillside, South Australia

R. ISMAIL*, C.L. CIOBANU, N.J. COOK, D. GILES AND A. SCHMIDT-MUMM

Deep Exploration Technologies Cooperative Research Centre, The University of Adelaide, Adelaide, SA 5005, Australia (*correspondence: roniza.ismail@adelaide. edu.au, cristiana.ciobanu@adelaide.edu.au, nigel.cook @adelaide.edu.au, david.giles@adelaide.edu.au, asmumm@gmail.com)

Hillside is an Iron Oxide Copper Gold (IOCG) mineralized system in the Gawler Craton, typified by skarn associations and genetically tied to the ~1.59 Ga Hiltaba Intrusive Suite. Incorporation of REE in skarn and accessory minerals is a valuable tool for understanding evolution of REE-enriched IOCG deposits and their footprints.

Mineralization is hosted within calcic skarns comprising prograde garnet-pyroxene-magnetite and retrograde epidote-actinolite-hematite associations. Early, high-temperature (~750 ºC; Zr-in-titanite geothermometry) pyroxene skarn (I) is tied to strong albitization. Pyrite, present in the calcic skarn (II), is replaced by chalcopyrite during the late-hydrothermal (main Cu-Au ore deposition, III) stage. Titanite, apatite and allanite are abundant throughout all stages of skarn evolution from early-prograde to late-hydrothermal collapse.

REE concentrations and distributions in skarn and accessory minerals were determined by LA-ICP-MS. Whereas skarn minerals are extensively replaced in the main ore stage, accessories are still present, and their REE trends depict all stages of evolution (Fig. 1). Significantly, they record HREE-enrichment in stage III. This can be interpreted as a response to change in the fS_2 character of fluids.

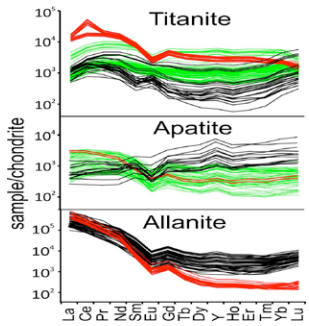

Figure 1 Chondrite-normalized REE+Y plots for accessory minerals. Red - early skarn (I); green - main calcic skarn (II); black - main sulfide deposition (III). Note progressive LREE-depletion and HREE-enrichment during evolution of the IOCG-skarn system.

The data show that REE signatures of accessory minerals from IOCG systems can help monitor development of alteration, and provide a framework for discriminating mineralized from non-mineralized systems in the region.

Mid to Late Holocene decreasing precipitation trends as reflected in $\delta^{18}O$ of speleothems from Apuan Alps (central Italy): Implications for seasonality

I. ISOLA[1], E. REGATTIERI[2], G. ZANCHETTA[1,2,3], L. ZHORNYAK[2] R.N. DRYSDALE[4], J.C. HELLSTROM[5]

[1]Istituto Nazionale Geofisica Vulcanologia, sez. Pisa, Italy; e-mail: isola@pi.ingv.it

[2]Dipartimento di Scienze della Terra, University of Pisa, Pisa, Italy

[3]Institute of Geosciences and Earth Resources, CNR Pisa Research area. Pisa, Italy

[4 1]Melbourne School of Land and Environment, The University of Melbourne, Australia

[5]School of Earth Sciences, The University of Melbourne, Australia

Changes in insolation related to Earth's orbital variations played a central role in the global-scale changes in climate of the last 11,500 cal yr. A progressive decline in summer temperature since the middle Holocene is well established from pollen and plant macrofossil data in northern and central Europe. The Mediterranean region has also become drier from the Middle Holocene to the present, with a marked precipitation seasonality that is crucial for both Mediterranean ecosystems and societies. Several records show contrasting seasonality patterns between southern and northern border regions of the central Mediterranean during Middle to Late Holocene. In this poster we present $\delta^{18}O$ stalagmite data sets from Corchia and Renella caves (Central Italy), showing long-term trends of increasing values (i.e. reduced rainfall) from Middle to late Holocene, while at secular to millennial scale they present different behavior. This difference is due to the variable recharge conditions related to changes in seasonality. These data can provide a more precise picture of the variations in the seasonality in the Mediterranean area

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