



ADELAIDE UNIVERSITY

Geology and Geophysics

**The Poodla Granite in the Olary Domain,**

**South Australia:**

**Intrusive Relationships, Alteration and implications for**

**Cu-Au mineralisation**

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**ABSTRACT**

The Palaeoproterozoic Poodla Granite within the Olary Domain, Curnamona Province, South Australia, has been suggested as a direct contributor to Cu-Au mineralisation within the region on the basis of age correlations.

Alteration present within the Poodla Granite consists of four styles that have been interpreted as two events. The first event includes pervasive potassic alteration followed by pervasive Na-Ca alteration. Sm/Nd isotope analysis indicates fluids for this event were sourced from the Willyama Supergroup sediments. The second event consists of fracture-controlled sodic and Ca-Na-Si alteration with associated actinolite/clinopyroxene brecciation. Utilisation of magmatic major element trends obtained from a natural analogue (Mt Angelay Complex, Cloncurry District) has allowed greater accuracy in chemical characterisation of alteration. Fluid inclusion analysis has identified two distinct fluids involved in the later fracture-controlled sodic and Ca-Na-Si alteration event. Namely, a low salinity (18-26wt% NaCl equivalent) and a high salinity (35-45wt% NaCl equivalent) fluid. A later fluid mobilisation event related to the Palaeozoic Delamerian Orogeny is indicated by re-equilibration of the Rb/Sr isotopic system.

New age constraints from other granites in the I-type suite, to which Poodla Granite belongs, suggest the Poodla Granite did not have direct hydrothermal input into regional Cu-Au mineralisation. Analysis of alteration chemistry suggests that Cu and Au mobilisation occurred during the first alteration event. These results offer evidence for

previously untested Cu-Au mineralising models within the region and may encourage exploration for Cu-Au resources.

Key Words : Curnamona Province, I-type granite, Alteration, Cu-Au mineralisation