THE REE CHARACTERISTICS OF K-FELDSPAR PHENOCRYSTS IN ALKALI PORPHYRIES WITHIN MINERALIZED ALTERATION ZONE, P. R. CHINA

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The Yaoan gold deposit is located in the Yaoan alkali-porphyry, which is a part of the Honghe-Jinshajiang alkaline intrusive zone, China. Gold mineralization is concentrated in the potassic alteration zone, and the main mineralogical variation is reflected by the replacement of secondary K-feldspar (Or90.3Ab9.3Ano.4) for primary K-feldspar (Or70Ab29An1) during potassic alteration. In this study, the REE composition of primary and secondary K-feldspar within the same phenocryst of alkali-porphyries in the potassic alteration zone was analyzed by LA-ICP-MS. The main results are given as follows. 1. The total REE remarkably increased and the positive Eu anomaly weakened from primary k-feldspar to secondary K-feldspar. The weakening of positive Eu anomaly indicates that the potassic alteration occurred in a relatively oxidized and low-temperature environment. In combination with fluid inclusion and mineralogy evidence, the increase of the total REE suggests that altered fluid is enriched in REE and contains complex agents, and it is considered to have been derived from the magma responsible for the Yaoan alkali-porphyry. 2 Similar REE characteristics for secondary K-feldspar and ore mineral (pyrite) imply that the alteration fluid and ore-forming fluid were both derived from the same resource, suggesting the ore-forming hydrothermal solution was also drived from the alkali magma. Based on the above results, we can draw the conclusion that the possible genetic relationship between the Yaoan gold deposit and alkali-porphyries is that the late magmatic hydrothermal solution associated with the petrogenesis of Yaoan alkali-porphyry played an important role in gold mineralization.