DEEP-DERIVED FLUIDS AND GOLD MINERALIZATION, EXAMPLE FROM JINCHANGYU GOLD DEPOSIT, HEBEI, CHINA

QIN DAJUN, CAI XINPING Institute of Geology and geophysics, Chinese Academy of Sciences, Beijing, China.

The mass balance analysis for the altered rocks of the Jinchangyu gold deposit demonstrated that Al_2O_3 is immobile, and the variation of trace elements of gold bearing quartz veins are distinctive from those in altered rocks. The composition of the altered rocks from the weak altered rocks to gold-bearing quartz veins is irregular, and the quartz veins and altered wall rocks would be formed in different conditions. Positive ion contents of fluid inclusions in quartz veins are relatively constant, and the content of Na+ is larger than K+. Based on the experiment data of gold distribution coefficient between fluid and melt, Na+ promotes the combination of Au and Cl ions and the transfer of Au from melt to fluid, however, K+ trends to remain Au in residual melt. Chemical compositions of fluid inclusion are mainly composed of H_2O, CO_2, H_2S, SO_2, CH_4, H_2, N_2, corresponding with mantle-derived inclusion compositions except for H_2O. The mantle-derived density-temperature-high supercritical C-H-O fluid, having minor F, Cl, S, P inertia gas, can dissolve a great number of major and trace elements, and H_2O under the mantle environment condition would transport Sn and chalcophile elements. Deep-derived fluids would play important roles in the formation of the Jinchangyu gold deposit. Sodium-rich fluids and the mantle-derived density-temperature-high supercritical C-H-O fluid, having minor F, Cl, S, P inertia gas, would greatly affect the richment, transportation and deposition of ore-forming materials.