Fluid geochemistry of Dabate porphyry copper deposit, western Tianshan in Xinjiang, NW China

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Dabate Cu deposit is a new discovery in western Tianshan. The results of analyses on homogeneous temperature and salinities analyses on the fluid inclusions and H and O isotopic composition show that in different quartz samples, each type of fluid inclusions has similar homogeneous temperature, salinities and density. Oxygen and hydrogen isotope studies show that the ore-forming fluids are mainly from magma and probably deep-derived or mantle-derived. The ore-forming fluid display low salinity with the values mainly range form 2.9% to 7.2%. The homogeneous temperature of the gas and liquid phase range from 185 to 390°C and most value between 185 to 283°C. The melted temperature of inclusions with daughter minerals is between 181 to 431°C.

Combining the Re-Os and U-Pb dating, we suggest that the tectonic event occurred during late Carboniferous to early Permian, resulted emplacement of deep-derived porphyry magma and formed volcanic apparatus which consist of granite-porphyry, rhyolitic porphyry and rhyolitic crystal tuff lava. Considering the special relationship between the ore bodies and volcanic and sub-volcanic rocks, combining the geological information from isotope and fluid inclusion studies, the authors concluded that the ore-forming fluids are deep-derived but the ores are deposited at medium to hypabyssal environment. The Cu(Mo) mineralization is closely related to the late phase of the volcanic apparatus.

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Fluid inclusion characteristics of Dachang gold deposit in Eastern Kunlun orogenic belt,Western China

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Using advanced Linkam cooling-heating stage and Renishaw Laser Raman Spectrometer, the authors carried out systematic studies on the primary fluid inclusions in quartz and calcite from the Dachang gold deposit in Qinghai Province. The results show that quartz and calcite contain lots of primary fluid inclusions, which can be classified into aqueous two-phase type,CO_2-bearing three-phase type and CO_2-rich or pure CO_2 type.Microthermometric studies indicate that the temperatures,salinities *w*(NaCleq) and densities of the ore-forming solutions vary from 180 to 260°C, 0.2%to 8.3%, and 0.69 to 0.78g/cm^3, respectively. The ore-forming fluids belong to the NaCl-H_2O-CO_2 type characterized by rich CO_2, low-moderate temperature, low salinity, low density and strong reducibility. Meanwhile, the data of ore-forming pressure were also obtained from the fluid inclusion study. Based on the pressure and the relationship between the pressure and the depth of f fracture zones, it is known that the ore-forming depth is 5.03-7.63 km. The ore-forming fluids are mainly composed of H_2O and CO_2, with minor amounts of CH_4, H_2S, CO, N_2, H_2 and trace amounts of such organic matters as C_2H_2, C_2H_4,C_2H_6,C_3H_8 and C_6H_6.The ore-forming fluids of the Dachang gold deposit were mainly derived from meteoric water mixed with formation water and a small amount of mantle-source magmatic water. Fluid immiscibility and existence of organic matters play important roles in the gold mineralization process.

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