The geological features and the gegularities of vertical zoning of Pianyanzi gold deposit

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Pianyanzi gold deposit is a rare kind of sellaite type gold deposit in the world, which is large-scale, early researched and exploited in Kangding gold field. This article selects this deposit as the research object, focuses on the law of vertical zoning of the deposit to explore genesis, provides a reference for predictive deep prospecting.

Through the research, the following results are achieved:

Almost all the gold orebodies of Pianyanzi gold deposit extend near the north-south direction. The types of gold-bearing geologic bodies contain the auriferous quartz sulfide veins that interspersed in the dolomite, and the ore-bearing dolomite that associated with diabase. The age of zircon $^{206}Pb/^{238}U$ of the mafic diabase may be the crystallization age of the diabase of Pianyanzi gold deposit. Derived through the quartz ESR test we get that the last activity age of the quartz is very different from the age of zircon which is mentioned above, indicating that the formation of diabase and deposits are not directly linked, but the basic veins and gold mineralization are closely related in space.

Pyrite sulfur isotope analysis of quartz veins in Pianyanzi gold deposit shows that, $\delta^{34}S$ has characteristics such as concentrated distribution and a higher degree of uniformity, and the isotopic composition in line with magma sulfur or sulfur mantle characteristics. It can be said that they may come from deep magma and the gold mineralization is closely related to magmatic hydrothermal activities.

Pianyanzi gold deposit has obvious vertical zonations. Through the macroscopic point of view, vertical zoning rules of the deposit of mineral assemblages are: the mineral assemblages in shallow part are pyrite with quartz combinations; in the middle are chalcocite and pyrite with quartz and ankerite combinations; in deep part there are galena or sphalerite with tetrahedrite and quartz and pyrite combinations. The quartzs produced in shallow part are relatively purer. Fractionations of LREE and HREE are the same no matter in shallow part or in deep part. Quartzs in shallow part show negative Ce anomalies, positive and negative Eu anomalies. Quartzs in deep part show little or slightly negative anomalies in Ce and Eu.