

ZHANG Baisong, 2014. The Basic Study of the Cs-Bearing Geyselite Deposit in Targejia, Tibet. *Acta Geologica Sinica* (English Edition), 88(supp. 2): 942-943.

The Basic Study of the Cs-Bearing Geyselite Deposit in Targejia, Tibet

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1 Introduction

The Targejia hot spring geyselite cesium deposit, only occurring in Tibet, is an important type of modern hot spring deposit. This geyselite Cs-deposit is of great significance in scientific research fields and industrial production, for its high content of cesium (the quantity of resource of Cs is about 14459.42t). This paper has done some basic research alongside the big modern thermal spring, the inactive spring center and the acidic spring water area in Targejia. The systematic study of the geological characteristics of this ore deposit is based on the regional geological background and previous achievements.

2 Geological Setting of the Targejia Hot-Spring Geyselite Cesium Deposit

The Targejia hot spring geyselite cesium deposit, located in Angren County of Tibet, is the southernmost point of the Dajiacuo-Dajiamangcuo rift valley. Lots of eruptive fountain, hot springs and sediments of the springs occur in this mining area. The stratum of this area is mainly the flysch deposition of sandstones and shales. Quaternary sediments expose extensively in the area. The biotite monzonitic granite is the main magmatite of this region. Three main fracture structures occur in this area, with the trend of NE, NS and NW respectively, and the Targejia Cs-bearing deposit is located precisely south of the intersection of these three fracture structures.

3 The Main Characteristics of This Deposit

The Cs-bearing sediments mainly expose at the surface of the Quaternary sediments, on the upper part of the river terrace, and around the center of the hot springs. These sediments are mainly made up of geyselite, which composes of quartz and opal.

Geochemical analysis of the spring water (both the alkaline water and the acid water) and the geyselite sediments are conducted during this study. Our research data shows that the alkaline spring water and its geyselites have higher content of cesium than that of the acidic spring water and its sediments. PH plays an important role in controlling the distribution of cesium in both of the spring water and the sediments. Around the big modern thermal spring and the inactive spring center, geyselites with high content of cesium tend to appear nearby the central position. There may be two possible patterns of mineral deposits around the big modern thermal spring, such as the normal chemical deposit of the spring water, and the precipitation of the falling spring water from the air erupted by the thermal spring. Nevertheless, the inactive spring's sediments used to have the pattern of normal chemical deposit possibly. The analysis of the correlation among Cs, Rb and Cl in the spring water in the ore district suggests that the acidic spring water may come from the shallow heat reservoir, which may also slightly react with the surrounding rock. Whereas, the alkaline spring water may come from the area that between the deep heat reservoir and the shallow heat reservoir, and the deep heat reservoir plays a leading role. Cs, Li, Na, K, Ca, Rb and Tl have positive correlation in geyselite-sediments, and Cs, Li, Na, K and Rb have negative correlation in the sediments nearby the acidic spring water on the contrary.

Acknowledgements

The related work is guided by researcher Zhenqing Li and prof. Zengqian Hou. The samples of this research is collected with the help of doctors Yunfei Liu and Wei Liang. I show my deep appreciate for the help of my teachers and seniors.

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