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Stable Isotope (C, O) Study of Ma Naoke Carlin-type Gold Deposit in Western Si Chuang Province

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Ma Naoke gold mine is located in western Si Chuang province, found in the late eighties of twenty century in China which belongs to the Carlin-type gold deposit. The ore deposit occurs in west Qin Ling orogenic belt, controlled by NWW thrust nappe fault and linear fold structure consisting of slate, calcareous sandstone, marlstone, limestone. Calcite veins are dominant throughout the mineralization. The paper analyzes for stable isotope ($\delta^{13}\text{C}$, $\delta^{18}\text{O}$) combined with the geological features in order to assess the nature and origin of the vein-forming fluids. The calcite samples are detected in Chengdu University of Technology lab by MAT253. The value of $\delta^{13}\text{C}$ show that the origin of C comes from marine carbonate formed in inorganic environment. The value of $\delta^{18}\text{O}_{\text{PDB}}$ transformed into $\delta^{18}\text{O}_{\text{SMOW}}$, six of the samples have

lower value may go through hydrothermal alteration. judging from the all dates which are almost higher than the normal range of calcite carbonate, we infer that isotope exchange between the C in carbonate and that of the hydrothermal fluid, and show fluid mixing action, which making a significant effort on the precipitation and enrichment of Au. According to the previous researches on fluid inclusion, which deduced the magma hydrothermal perhaps play an great part in the process of the hydrothermal mineralization. Meanwhile, Lv(1999) discovered the deep remote sensing anomalies showing deep magmatic activity related to the mineralization.

Key words: Ma Naoke gold deposit, stable isotope ($\delta^{13}\text{C}$, $\delta^{18}\text{O}$), ore-forming hydrothermal origin

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