

Paper Number: 1614

Metallogenic characteristics of altered granite type Sn-Cu polymetallic deposit, Gejiu, China

CHEN Shou-yu^{1, 2}, ZHAO Jiang-nan^{1, 2}, TONG Xiang³, WU Jun-de³, CHEN Shou-yu³

1. School of Earth Resources, China University of Geosciences, Wuhan 430074, China

2. State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Wuhan 430074, China

3. Group Company of Stannary, Yunnan Gejiu, 610000, China

The Gejiu tin polymetallic ore district, located at the western Cathysian block, has hundred years mining history. It is the world's largest primary tin district with total resources of approximately 300 Mt Sn at 1%, 300 Mt Cu at 2%. The outcrop of the area mainly comprises Triassic carbonate rocks, and the wide widespread Yanshanian granites. Comparing to interlayer oxidized and skarn ore types, the newly discovered altered granite type Cu-Sn polymetallic deposit with great potential, located in the inner alteration zone of the granite edge in Gejiu at the depth about 1000 meters away from the surface, has been increasing interests to geologists. Field and microthermometry studies revealed that these ores, accompanying Sn, Cu, W, Bi, Pb, Zn, Ag, As, Sb elements, are mainly controlled by alteration granites and E-W fractures. These ore bodies are in simple lenticular-and stratiform-like arrangements whose thickest part is approximately 60 m, and the grades of tin and copper range from

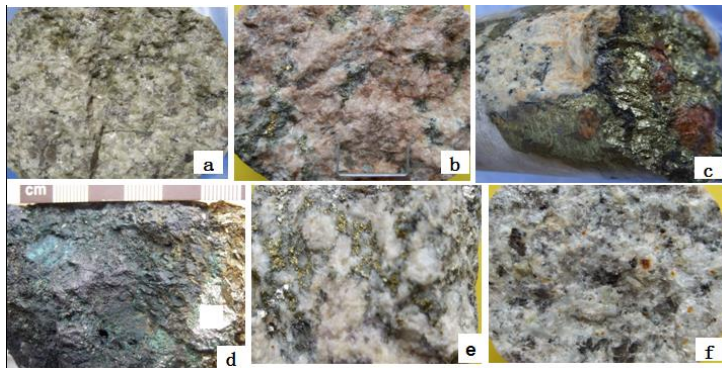


Figure 1: Ore structure of alteration rock type "basement" Sn, Cu polymetallic deposit

a. Green curtain granite; b. K-feldspathization granite ore; c. Fluorite rich ore; d. Tourmalinization rich ore;

0.2% to 1.34% and 0.3% to 3.0% respectively. Wall rock alterations resulted in the formation of K-feldspar, tourmaline, quartz, fluorite, pyrite, epidote, chlorite, sericite, and carbonate (Figure 1). The alteration zone boundary is vague. Secondary K-feldspar, fluorite, and pyrite are the closest alteration minerals related to mineralization. This study also shows that these ores probably represents the high-temperature part of the Gejiu mineralization system. Therefore, this study has concluded ore-prospecting model of "three levers

and basement" instead of the traditional model of "three levers" model, which can benefit further mineral exploration.

