The Gangdese porphyry copper belt (GPCB) is located in the southern margin of the Lhasa terrane (Fig. 1). Many porphyry and related skarn Cu (Mo, Au, Pb-Zn) deposits have been discovered in the GPCB, including Xiongcun, Jiama, Qulong, Chongjiang, Dabu, etc (Qu et al., 2001; Hou et al., 2003). The Xiongcun district is located in the western segment of the GPCB (Fig. 1). Three copper-gold deposits (No.I, No.II and No.III) have been discovered in the past decade (Lang et al., 2013). No. I deposit is the first porphyry copper-gold deposit discovered in the Xiongcun district. 167 diamond drill holes totaling 47,279 m completed by Tibet Tianyuan Minerals Exploration LTD. in cooperation with Chengdu University of Technology and the Institute of Mineral Resources of Chinese Academy of Geological Sciences in 2004 - 2012. An evaluation in 2012 showed that the No.I deposit host s a measured and indicated resources of >1 Mt averaging 0.48% copper, >140 t averaging 0.66 g/t gold, and >900 t averaging 4.19 g/t silver (Tang et al., 2012). The copper-gold mineralization of the No.I deposit formed ca.161.5 ± 2.7 Ma and related to the 167 – 161 Ma quartz diorite porphyry with large quartz eyes (IUQ) (Lang et al., 2004). The copper-gold mineralization is closely related to the silicification/stockworks and the potassic alteration. The main mineralized vein types in the No.I deposit are the quartz – sulfide and biotite – sulfide veins. The dominant sulfides of ore are pyrite, pyrrhotite and chalcopyrite. Magnetite is uncommon in the No.I deposit.

Due to quartz – sulfide veins contain highest grades of copper-gold mineralization and their distribution is one of the key controls on ore-grade mineralization (Tang et al., 2012), so in order to study characteristics of the ore-forming fluid in the No.I deposit, we selected core samples of quartz – sulfide veins from the silicification/stockworks and the potassic alteration zones within section A - B (Fig. 1). Raman spectroscopy is used to detect gaseous composition of fluid inclusions trapped in quartz of the quartz – sulfide veins. The results of Raman spectroscopy (Fig. 2) indicate the predominant CH4 in the gaseous composition of hydrothermal fluids. CO2 has been identified in inclusions from most porphyry copper deposits, whereas CH4-rich fluid inclusions are typically not detected in most porphyry Copper deposits (Shen et al., 2010; Cao et al., 2014). The origin of the CH4 in the No.I deposit is needed to more detailed studies, however this new understanding will provide further constrain to the genesis of the deposit.

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**Reference**


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Fig. 1. Summary geological map of the Xiongcun district.

Fig. 2. Laser Raman spectra of fluid inclusions of the No.1 deposit in the Xiongcun district.


