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The Gaerqing Copper-Gold Deposit: May Be the Next Large-Scale Epithermal Deposit in the Duolong Ore-Concentrated Area, along the Bangong-Nujiang Suture Zone, Tibet

FANG Xiang¹, DING Shuai¹, WANG Yiyun¹, WANG Qin¹ and YANG Chao²

¹ Chengdu University of Technology, Chengdu 610059, China

² Institute of Mineral Resources, Chinese Academy of Geological Sciences, Beijing 10037, China

The Duolong ore-concentrated area, discovered along the south of the Qiangtang- Sanjiang composite plate and the north of the Bangong- Nujiang suture zone, is situated in Geize County, the northwest of Tibet autonomous region. In recent years, with the discovery of the large-scale porphyry copper-gold deposits, Duobuza and Bolong, and the peripheral deposits, Naruo, Nadun, and Dibaonamugang copper-gold deposit, the potential resource evaluation of the western Bangonghu- Nujiang metallogenic belt harvests outstanding progress. Especially

the finding of the south of Tiegelong, the super large-scale porphyry epithermal copper(gold- silver) deposit(Tang J X et al., 2014), provides a new way of thinking to prospect large/super large copper-gold deposits along the Bangonghu- Nujiang metallogenic belt in the future.

The Gaerqing ore district is located in the east of Duolong ore concentrated area, longitude 83°41'00"~ 83°44'00" and latitude 32°49'00"~ 32°50'15". To the west of it, there are Naruo, the south of Tiegelong, Duobuza, Bolong copper- gold ore districts.

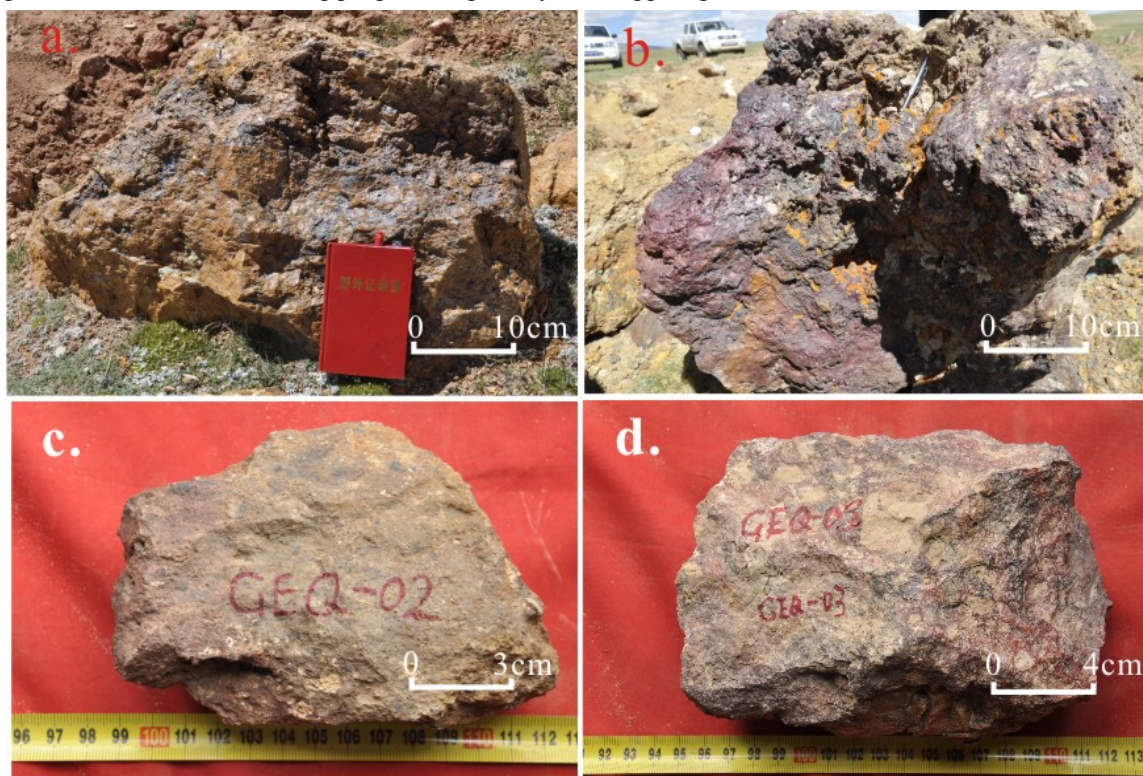


Fig.1. The vuggy quartz and silicious breccias in the Gaerqing ore district

* Corresponding author. E-mail: francisfx@126.com

Table 1 Contents of trace elements of the Gaerqing silica cap

units	$\omega(B)/10^{-9}$					$\omega(B)/10^{-6}$					
elements	Hg	Au	Ag	As	Ba	Cu	Te	Tl	Sn	Pb	Zn
GEQ-02	3493	0.33	32.3	289	80.0	95.0	1.99	0.32	190	10660	96.3
GEQ-03	11075	0.37	26.6	344	84.9	136	3.97	0.44	144	41780	152
GEQ-04	4521	0.33	17.7	345	91.7	106	3.60	0.28	240	40570	141

During the prospecting and researching progress in the Gaerqing ore district, we find that there is plenty of silica cap/ lithocap in the east of this region, which behaves like separated, massive, raised and vuggy quartz or silicious breccias/ flinty silicalite (fig. 1a,1b). Generally, the copper or gold(silver) ore bodies of epithermal deposits can be stored in the lithocap/silica cap. Also, the hypogene intermediate-acid intrusions, which are always under the lithocap, may be the mineralization mother rock of the porphyry copper-gold deposits, molybdenum deposits or tin deposits(Sillitoe, 1983). So, the exposure of the geologic body has an significant instructive meaning of prospecting porphyry epithermal deposits.

We sampled the silica cap(silicious breccias) to do the geochemical analysis(fig. 1c,1d). it displays that SiO_2 contents range from 87.06 to 93.71 %, average 89.76 %, and part of trace elements are shown in the table. 1. Au average grade is 0.34 g/ t; average Ag grade is 25.5 g/ t; but average Cu contents are only 112.43 ppm. It declares that the silica cap enriches Au and Ag, but deplete Cu. The ore bodies in this kind of cap are mostly stored in hydrothermal breccias, net veined or disseminated sulfide ore body, which composed of residual shaped quartz and silicide, always have alunilite, characterized by having low sulfide contents, and usually consist in the upper of lithocap or was close to the ancient water level (Xu Q S et al., 2010). This is what silica cap in the Gaerqing ore district possesses. At the meanwhile, Hg, As, Te, Sn etc., contents of the samples are higher than the regional background value apparently. The enrichment of this types of elements can offer implications for Au exploration or be beneficial for the occurrence of Au. It exhibits the potential for prospecting Au, Ag ore bodies in this region.

We also sampled the granite porphyry, which is close to the silica cap, to do the LA-ICP-MS zircon U-Pb isotope analysis. The the weighted average age of the granite-porphyry is 124.34 ± 0.36 Ma. But whether this stage porphyry forms the ore body in the silica cap is still waited to be discuss. Studing on the statistics of the mineralization age in the Duolong ore concentrated district, We find that the diagenesis and mineralization ages in this district are fastened on 121 to 111Ma(She H Q et al., 2009; Zhu X P et al.,2011; Li G M et al., 2011), which is similar to the diagenesis age of the granite-porphyry, sampled by us in the Gaerqing region. This period corresponds to the island

arc- ocean basin- continent transformation stage of the Bangong- Nujiang suture zone in the early Cretaceous epoch. In this period of time, ocean basin had not completely closed, and there was still northward subduction of the Bangong- Nujiang ocean. Also, the ore-forming material provided by the mantle wedge and the base of the Qiangtang terrane crust melting, during the subduction, is the key to form the Duolong super large porphyry epithermal copper- gold deposits(Jin-Xiang Li et al., 2014).

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