

ZHANG Jianfang, GONG Ruijun, XIE Huaisheng and XU Xingmiao, 2013. Ore Deposit Types and Petrogenesis and Metallogenesis in Lizhu Region, Northwestern Zhejiang Province. *Acta Geologica Sinica* (English Edition), 87(supp.): 824.

Ore Deposit Types and Petrogenesis and Metallogenesis in Lizhu Region, Northwestern Zhejiang Province

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Lizhu iron polymetallic district is located in the north-western side of the Jiangshan -Shaoxing deep fault, and north-eastern of Zhejiang section of QinHang metallogenic belt. The mineralization is closely related with north-east-striking folds, faults, stratus and intrusions. ore deposit type are mainly skarn type, deposition-modification type, magmatic hydrothermal vein type and disseminated-stringer type (Table 1). Re-Os model age of molybdenites is between 153.9 ± 4.8 and 148.6 ± 2.2 Ma, weight average age of 150.7 ± 1.6 Ma, and isochron age of 149.6 ± 1.8 Ma (MSWD=1.7), which is consistent with the zircon U-Pb age of Shanxi quartz diorite (granodiorite) and Guangshan granite within the error range. The time of the emplacement of intrusions and mineralization are at the end of late Jurassic, which was consistent with shift stage from compression-collision-shortening in Late Jurassic to regional extension and lithosphere thinning in Early Cretaceous. The Metallogenetic Pluton has characterized the evolution of from I-type quartz diorite (granodiorite) to A-type granites. The

petrogenetic tectonic environment was converted from the subduction collision to post-collision or post-orogeny, consistent with the conversion of the tectonic environment in South China, thus providing a new constraint for the tectonic-magmatic evolution in South China. Lizhu region have mainly experienced North West - South East folding orogenesis in Indochina period, intra-continental compression and thrusting fault in middle-late Jurassic, and regional compression - extension shift accompanying with magmatic intrusions and mineralization between late Jurassic and early Cretaceous.

Key words: Ore deposit types; Metallogenesis; Lizhu region; Northwestern Zhejiang Province

References

Zhang Jianfang, Xie Huaisheng, Xu Xingmiao and Gong Ruijun. 2003. Geological and geochemical characteristics and tectonic and prospecting significance of the Shanxi-Guangshan intrusions in Lizhu area, Zhejiang Province. *Geology China*, 40(2): 403-413 (in Chinese with English abstract).

Table 1 Characteristic types of Metal deposits in Lizhu area

Genetic types of deposit	Deposit name	Host rocks and time	controlling structure	Mineralization associations	Minerals
Skarn type	Lizhu Fe deposit		NE fault, 310-320° 45-60°	Fe	Magnetite (main), hematite, perlimonite, specularite (minor), sphalerite, chalcopryrite, galena, pyrrhotite, molybdenite, malachite, azurite (little)
	Ganxiwu Fe deposit		NE fault, 315-330° 50-70°		Chalcopryrite (main), sphalerite, galena (minor)
	Huangyoutang Cu deposit	Dolomite, shaly calcite dolomite, dolomitic siltstone, potach siltstone (Z_1d+Z_2dy)	NE-NEE reverse fault, 290-360° 20-35°	Cu-Pb-Zn	Chalcopryrite (main), sphalerite, galena (silver-bearing), magnetite, malachite, molybdenite (minor)
	Shuangjianfeng Cu polymetallic deposit		NE reverse fault, 290-310° 60-75°	Cu-Pb-Zn-Ag-Mo	Sphalerite, Chalcopryrite (main), magnetite, galena (silver-bearing), malachite, azurite (minor)
	Guangshan-Jiangzao Zn polymetallic deposit		NE reverse fault, 320-335° 60-75°	Zn-Cu-Pb-Ag	Sphalerite, galena (main), magnetite, chalcopryrite (minor)
	Huizhaotou Pb-Zn deposit	Carbon-bearing dolomitic limestone, Banded argillaceous limestone ($\in_1d$)	NEE reverse fault, 330-340° 35-60°	Pb-Zn-Cu-Ag	Sphalerite, galena (main), magnetite, chalcopryrite (minor)
Deposition-modification type	Fengtangwu Mo deposit	Argillaceous siliceous rocks and mudstone ($\in_1h$)	NE fault, 310-320° 45-60°	Mo-Ni	Molybdenite, gersdorffite, vaesite (main), sphalerite, galena, chalcopryrite, magnetite (minor)
magmatic hydrothermal vein type	Shangtan deposit	Mo-Zn medium-coarse-grained granite ($J_3\gamma^2$)	NE fault, 310-315° 40-45°	Mo-Zn	Molybdenite, sphalerite
	Gutangshan polymetallic deposit	Cu Gravel silty mudstone (Qb_1l)	NNE fault, 295-320° 40-65°	Cu-Pb-Zn-Ag	Chalcopryrite, galena (silver-bearing), sphalerite
disseminated-stringer type	Shaojiabu Mo deposit	Fine crystalline granite ($J_3\gamma^3$)	NWW-NE cracks, 120-150° 30-40°	Mo	Molybdenite

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