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The 3rd Major Period of Nickel Mineralization in China

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Qinghai province is located in the hinterland of China, in the northeastern Qinghai Tibet Plateau, across Asia and Tethys - Himalayan metallogenic domain, and it is the important gold, copper, nickel metal mineral base. Magmatic Cu-Ni-PGE sulfide deposit is related to mafic - ultramafic magmatic mineralization in sulfide deposit primarily, with nickel, copper and platinum group elements mainly occur in this type of ore deposits, of which more than 60% nickel and 90% of the platinum group elements are derived from this kind of deposit. Its share of global nickel, platinum mining quantity nearly half or more, than porphyry, sand shale type, and this type of copper reserves is accounted for about 5.5% of global copper total reserves, and is one of the main industrial types of copper deposits. In China, nearly 86% ,more than 90% nickel, platinum, copper reserves of about 7.3%, are derived from magmatic Ni Cu sulfide deposit. Therefore, the study on Ni -Cu-PGE magmatic sulfide deposits has important significance in metallogenic theory prospecting in practice.

1 Xiarihamu deposit Characteristics

Xiarihamu deposit in Lalingzaohuo assembly area is located in the east of KunLun metallogenic belt, which magmatic liquation Cu Ni deposit is found for the first time in this belt in our country. From 2008 to 2010, by the Qinghai geology and mineral resources survey project, people discovered copper nickel ore, and prospecting has achieved a major breakthrough from 2010 to 2013, by exploration for three years. Preliminary estimate of the total amount of resources 1070000 tons of nickel, were associated with copper 210000 tons, 40000 tons of associated cobalt, has reached the super large scale,

currently ranked second in the country is rich in deposits of nickel, nickel deposits in China after Jinchuan. Xiarihamu Cu-Ni-Co deposit has the characteristics of burial depth and high grade. The discovery of the deposit shows with huge metallogenic potential of such deposits in East KunLun metallogenic belt, is of great significance to the entire eastern KunLun area and even the whole country for this type deposit, after development the contradiction between supply and demand greatly ease the country nickel resources.

2 Isotopic age Determination

Through the work of recent years, the nickel deposit newly discovered the periphery (point) are Niubiziliang copper nickel deposit, Gaxiuyaping eastern copper nickel ore spot and Xiarihamu super large copper nickel deposit, in order to determine the diagenetic and mineralizing age, the author obtain that La-ICP-MS zircon U-Pb ages of the Niubizi gabbro is 367Ma, Gaxiuyaping eastern gabbro 423Ma, and zircon U-Pb age of Xiarihamu gabbro is 439Ma, and Sun Fengyue et al (2012) of Jilin University obtain zircon U-Pb ages for 422Ma and 393Ma. These age values in the Early Silurian to the late Devonian period. As everyone knows, the nickel deposit belt in the Yangtze platform and Xinjiang East Tianshan fold formed mainly in Permian, Jinchuan rock and Kuluketage area Xing to rock belt were formed in Neoproterozoic, this is our two nickel mineralization stage. The known nickel deposits of Chai peripheral basin are formed during Silurian Devonian, that is end of the early Paleozoic, and late Paleozoic early, but Xiarihamu is the second largest nickel deposits Chinese, which means that the end of the early Paleozoic, late Paleozoic early is our third nickel mineralization stage.

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3 Discussion

At present, China's nickel copper platinum mineral resources are relatively scarce. In recent years, Tulard Gen, Heishan, Niubiziliang nickel deposits found that although the benefit, but still did not change this situation radically. Xiarihamu super large nickel deposit is nickel deposit only a nickel metal volume found worldwide in recent years, millions of tons, which caused widespread concern in the international academic and industrial circles deposit. Formation of extensional type island arc environment of the deposit, opens up a new prospecting area, and shows the East KunLun orogenic belt and once in tensional state of island arc environment have formed magmatic Ni Cu PGE deposit potential.

4 Conclusion

(1) Xiarihamu deposit is formed in tension island arc environment.

(2) The determination of isotope age me shows that the

Ni-ore forming period of Caidam peripheral is between 367-439 Ma in Silurian - Devonian period ,that is at the end of the early Paleozoic, late Paleozoic early.

(3) Xiarihamu is the second largest deposit, which means that end of the early Paleozoic and late Paleozoic early is the third main metallogenic period.

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