

# LA-ICP-MS Zircon U-Pb Geochronology of the Gaoyaohai BIF-Type Iron Deposit in the Guyang Greenstone Belt, Inner Mongolia



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**Abstract:** Banded Iron-Formation (BIF) is a marine sedimentary rock formed in the Precambrian. When the iron content reaches the industrial grade, a BIF iron deposit is formed (Zhang et al., 2012). Gaoyaohai iron deposit is one of the important BIF iron ore deposits in the Guyang greenstone belt on the northwestern margin of the North China Craton (Liu et al., 2012). From 1967 to 1968, the Inner Mongolia Autonomous Region's 105 Geological Team conducted a geological survey on the aeromagnetic anomaly of No.119 Gaoyaohai, Dalhan Maoming'an United Flag, and found out that the aeromagnetic anomaly was caused by a hidden magnet deposit, and the iron ore was discovered. The stone reserves are 22.02 million tons, which is a medium-sized sedimentary metamorphic magnetite. Since the discovery of the high-waist sea-iron deposit, no research work has been carried out. Based on the previous geological exploration, the zircon La-ICP-MS chronology study of the amphibolite in the ore-enriched rock is carried out. The geochronology of the Gaoyaohai iron deposit is discussed.

The Gaoyaohai BIF-type iron deposit is a concealed ore body, which occurs in the Neoproterozoic-Geo-Ecological ancient Seltershan group slanted amphibolite, and the ore body is in contact with the surrounding rock. The ore body is controlled by

the Maoxue hole anticline and is located in the northwest wing of the anticline. The overall trend is north-north-east, with a steeper appearance, and the dip angle is generally 66°–86°, even upright. The ore body is divided into two sections in the northwest or near east-west fault, and the No. I ore body is the main ore body of this area. The ore minerals are mainly magnetite, the gangue minerals are mainly quartz, followed by hornblende. The ore is mainly in the form of a granular-needle-like crystal structure with a strip-like structure. In this study, LA-ICP-MS U-Pb dating was performed on zircons selected from the slanted amphibolites, and a weighted average age of 1933±12 Ma was obtained (Fig. 1), representing a metamorphic hydrothermal event promoting mineralization of the Gaoyaohai BIF-type iron deposit.

**Key words:** Gaoyaohai BIF-type iron deposit, Zircon U-Pb age, Guyang greenstone belt

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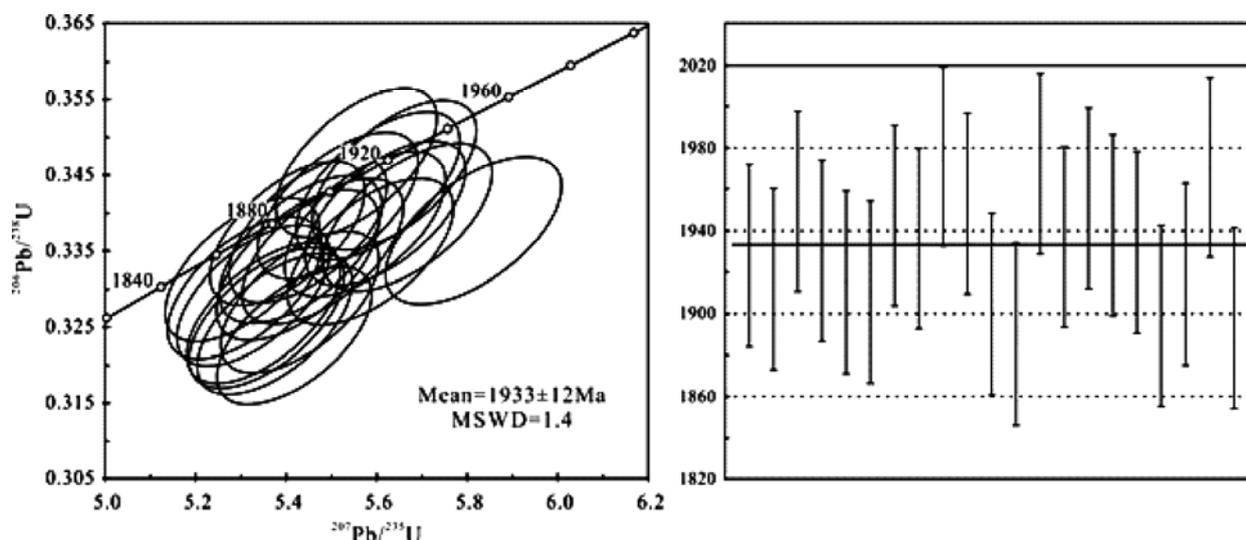


Fig. 1. Zircon U-Pb age concordia diagrams of the Gaoyaohai BIF-type iron deposit.

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