

## 内蒙古朝不楞砂卡岩型铁多金属矿床辉钼矿铼-钨同位素年龄及地质意义

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中文摘要:为了进一步查明内蒙古东乌珠穆沁旗朝不楞砂卡岩型铁多金属矿床的形成时间,对主要铁多金属矿体4件辉钼矿样品进行了铼-钨同位素分析,所获同位素等时线年龄为 $(140.7 \pm 1.8)\text{Ma}(2\sigma)$ ,其MSWD值为1.12.鉴于辉钼矿呈稀疏浸染状和条带状分布在铁多金属矿石中,并且与磁黄铁矿和黄铜矿呈共生结构关系,可以推测朝不楞铁多金属矿床的形成时间为早白垩纪,属燕山期构造-岩浆活动的产物.朝不楞砂卡岩型铁多金属矿床形成时代的厘定对于提高该矿床的理论研究水平和指导隐伏金属矿床的找矿勘查工作均具有重要意义.

中文关键词:铼-钨同位素年龄 辉钼矿 成矿时代 砂卡岩型铁多金属矿床 朝不楞 内蒙古

## Re-Os Isotopic Age Dating of Molybdenite Separates from the Chaobuleng Skarn Iron-Polymetallic Deposit, Dong Ujimqin Banner, Inner Mongolia

**Abstract:** Located in the easternmost part of the Chaganobo-Aoyoute-Chaobuleng Early Paleozoic tectono-magmatic belt on the southern edge of the Siberian plate, the Chaobuleng deposit is a medium-size skarn iron-polymetallic deposit occurring in central-eastern Inner Mongolia. Systematic drilling results show that the deposit contains metal reserves of Fe 1.9 Mt, Bi  $17 \times 10^4$  t, Ag 222 t, Sn  $0.61 \times 10^4$  t, Cu  $3.06 \times 10^4$  t, Au 1.68 t, Pb 9518 t and W 3979 t. The unique geology of the deposit has attracted the attention of ore geologists from China and abroad. During the Mesozoic Yanshanian orogeny, intensive tectonic and igneous activities resulted in the large-scale granitoid plutonism and relevant contact metasomatism in Chaobuleng and its neighboring areas. The Chaobuleng gabbro and granitoid stocks were emplaced in the Middle Devonian sedimentary sequence of the Taerbagete Group, controlled by the NE-trending fault zone. A large number of skarn blocks are located along the contact zone between these two intrusive stocks and their carbonate wall rocks. Although the gabbro and granite stocks show obvious differences in textures and mineral assemblages, both of them belong to alkaline-rich calc-alkaline igneous series. Iron-polymetallic mineralization occurs exclusively along the contact zone between the Mesozoic intrusive stocks and the Middle Devonian sedimentary sequences in the forms of pillars, cylinders, stratoid lenses and layers. The main metallic minerals of the iron-polymetallic ore from Chaobuleng are magnetite, pyrite, chalcopyrite, molybdenite, sphalerite, pyrrhotite, scheelite, galena, arsenopyrite, marcasite, bornite, bismutinite, galenobismutite, and native bismuth. The gangue mineral assemblage consists mainly of diopside, amphibole, grossular, andradite, almandine, vesuvianite, tremolite, actinolite, plagioclase, epidote, quartz, biotite, sericite, chlorite and calcite. Re-Os isotopic age dating of four molybdenite separates from the No. 1 mineralized zone gives an isochron age of  $(140.7 \pm 1.8)$  Ma, and the model ages range from 139.0 to 140.9 Ma with an average value of 139.5 Ma. As the Re-Os isochron age is in agreement with the field geological evidence, and the molybdenite has co-existing relations with chalcopyrite, pyrrhotite and pyrite, the authors hold that the Re-Os isochron age represents the major ore-forming time of the skarn iron-polymetallic mineralization occurring in the Chaobuleng deposit and its neighboring areas. Combined with field geological observations and petrological evidence, it is suggested that the ore-forming materials might have been derived from a mixed source of depleted mantle- and crustal-derived magma and related fluids. It is also considered that the Early Cretaceous intra-plate granitoid plutonism and the relevant iron-polymetallic mineralization were well developed in the Chaobuleng mineralized district and its neighboring areas after the Late Jurassic amalgamation of the North China massif and the Siberia plate. Therefore, the Chaobuleng mineralized district and its neighboring areas have a great potential for Mesozoic Yanshanian skarn iron-polymetallic deposits.


**keywords:** [Re-Os isotopic age](#) [molybdenite](#) [ore-forming age](#) [skarn type iron-polymetallic deposit](#) [Chaobuleng](#) [Inner Mongolia](#)

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