

内蒙兴和石墨矿含矿建造特征与矿床成因

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中文摘要:兴和石墨矿赋存于上集宁群深变质的孔兹岩系中,含矿的原岩建造主要为一套富铝的粘土质和半粘土质浅海相沉积物,岩系的基本特征与印度马德拉斯地区的孔兹岩系类似。前人认为石墨是由碳酸盐经变质作用转变而成,属无机成因。作者据新资料的综合分析认为石墨是大量原始藻类遗体堆积后经成岩作用和变质作用而成,乃属有机成因。

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Characteristics of ore-bearing formation and genesis of the xinche graphite deposit in Inner Mongolia

Abstract:The Xinghe graphite deposit occurring in khondalite series of Upper Jining Group is one of the well-known graphite mines in China. The main types of metamorphic rocks in the ore district include sillimanite-garnet gneiss, felsic gneiss, pyroxene gneiss, biotite-plagioclase gneiss, graphite gneiss etc. The contents of the main elements in these rocks are characterized by high Si, Al, low K, Na and $FeO > Fe_2O_3$. The chondrite-normalized REE patterns show the enrichment of LREE and the deficiency of HREE. The contents of such minor elements as Ni, Rb, Sr, Nb and Ba are higher than those of the Madras khondalite in India. The metamorphic temperature is in the range of 670—750°C, and the metamorphic pressure 0.75—1 GPa. The original rocks comprise bauxitic shale, silty mudstone, pelitic siltstone, feldspathic quartz sand stone and a few volcanic rocks. The graphite ore beds, which occur in the lower part of the khondalite series, consist of three ore layers containing nine orebodies, with the average ore grade being 4.1 per cent. The graphite is coarse lepidosome in form and has average $\delta^{13}C_{PDB}$ value of -21.51‰. Some previous researchers hold that the deposit is of inorganic origin; that is to say, the graphite was formed as a result of the metamorphism of carbonates. Based on an integrated analysis of the new data, the author considers that the ore deposit is of organic origin, and the graphite was formed through the metamorphism of large quantities of algal remains.

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