

王瑞廷,李芳林,陈二虎,代军治,王长安,许小峰. 2011. 陕西凤县八方山-二里河大型铅锌矿床地球化学特征及找矿预测. 岩石学报, 27(3): 779-793

陕西凤县八方山-二里河大型铅锌矿床地球化学特征及找矿预测

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基金项目: 本文受“十一五”国家科技支撑计划项目(2006BAB01A11)资助.

摘要:

八方山-二里河大型铅锌矿床具有热水沉积和后期改造的成矿特征,但REE、B、Ba、Tl等元素的分布特征不完全具有明显海底喷流特征,或者说其距喷流中心较远. 该矿床石英流体包裹体均一温度和闪锌矿中FeS中分子百分数及Ga/Ge原子比均显示成矿温度为200~340℃,以中、高温为主. 方解石流体包裹体均一温度为80~160℃和160~260℃,反映有两次热液事件的改造作用. 矿区矿化硅质岩中的锆石具有碎屑锆石的特点,U-Pb年龄值分散(400~1800Ma),不能代表硅质岩或铅锌矿床的形成时代,大量碎屑锆石的存在说明其形成环境可能是近海成因. 破坏铅锌矿体的闪长玢岩的形成时代为 214 ± 2 Ma,二里河矿区附近的花岗斑岩形成时代为 217.9 ± 4.5 Ma,二者皆是印支运动晚期的产物. 闪长玢岩切穿矿体和微石英岩,说明矿化改造作用应在此之前;矿体在背斜的转折端富集,说明改造作用的主体应在褶皱过程中发生,即印支运动早期是矿化改造期,也可能是印支早期至印支晚期之间. 八方山-二里河大型铅锌矿床的形成经历了热水沉积和构造改造2个成矿阶段,沉积阶段金属元素在中泥盆世地层中形成初步富集,为后期构造改造提供了物质来源. 该矿床成因为基底热水喷流沉积-构造岩浆改造型. 本区铅锌矿床的主要控矿构造应为同沉积背斜、提供热水运移通道的同生断裂构造及成矿物质沉淀富集的局限性沉积盆地构造. 同沉积灰岩背斜、灰岩与千枚岩接触带以及硅质岩或者碳酸盐岩地层区的“礁-硅-泥”岩套是最直接、最重要的找矿标志. 八方山-二里河铅锌矿区扩大找矿的最经济且有储量远景的地段是主背斜南翼TEM物探异常部位,这是为矿山寻找可接替资源的最佳勘查靶位.

英文摘要:

Bafangshan-Erlihe large lead and zinc ore deposit has metallogenic characteristics of hydrothermal sediment and paulopost reforming, but the distribution of REE, B, Ba, Tl and other elements has not wholly clear submarine exhalative feature, also that indicates the deposit has a far distance to exhalative center. Homogenization temperature of quartz fluid inclusion, FeS molecule percent and Ga/Ge atom ratio in sphalerite all showed mineralization temperature was 200~340℃, middle and high temperature dominated. Homogenization temperature of calcite fluid inclusion is 80~160℃ and 160~260℃, which reflected the reformation process of two hydrothermal events. The zircon of mineralized silicalite in the ore region has the same feature with detrital zircon, its U-Pb isotope age disperses in 400~1800Ma, that don't represent the formation age of silicalite or Bafangshan-Erlihe large lead and zinc ore deposit, the existence of a lots of detrital zircon proved metallogenic environment was offshore genesis. The formation age of dioritized porphyrite that cut ore body is 214 ± 2 Ma, and the formation age of granite-porphyry near Erlihe ore region is 217.9 ± 4.5 Ma. The two dikes are production of Late Indosinian movement. The dioritized porphyrite transected ore body and microquartzite, which indicated mineralized reformation happened before the dike formed. Orebody enriched in the arch of an anticline, which showed reformation mainly occurred during fold process, namely, Early Indosinian movement was mineralized reformation epoch, possible between Early and Late Indosinian movement. The formation of Bafangshan-Erlihe large lead and zinc ore deposit went through hydrothermal sediment and structure reformation two stages, metal elements initially enriched in Middle Devonian stratum in sedimentary stage, which provided substances source for later structure reformation. It concludes the ore deposit genesis belongs to basement hydrothermal exhalative sedimentary-tectonic magma reformation type. The main ore-controlled structure included synsedimentary anticline, syngenetic fault that was hydrothermal transportation pathway and local sedimentary basin where ore-forming substances sedimented and enriched in this lead-zinc ore region. Synsedimentary limestone anticline, the contacted belt of limestone with phyllite, and "organic reef-silicalite-argillite" suite in silicalite or carbonate rock stratum area are more direct and very important prospecting criteria. The most economic and reserve perspective target for enlarging exploration in Bafangshan-Erlihe lead and zinc ore region is TEM geophysical anomaly position that located the south limb of main anticline, where is the best exploration target for prospecting superseded resources to mine.

关键词: [八方山-二里河](#) [铅锌矿床](#) [热水沉积](#) [地球化学](#) [同位素年代学](#)

投稿时间: 2010-10-01 最后修改时间: 2011-01-20

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