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论文

毕节地区晚二叠世煤中微量元素的分布赋存规律及控因分析

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摘要：

基于贵州毕节地区13份煤矿勘探报告中的灰分、硫分、煤灰化学成分以及煤中Ge，Ga，U，Th，V，Cl，As，F，Pb，Cu，Zn等11种微量元素含量等数据，探讨了贵州毕节地区煤中微量元素的富集特征、赋存规律及其控制因素。引入“储量权重系数”方法计算了毕节地区煤中11种微量元素的“储量均值”。研究表明：毕节煤中Pb，Cu，Zn，U和V异常富集，Ga较为富集，F，Th略有富集，Ge，Cl含量较低，As含量高于中国煤，但明显低于美国煤。相关性分析显示F可能主要赋存于碳酸盐矿物中，Pb和Cu可能以硫化物形式与铁硫化物共生，Cu表现出一定的有机亲和性。Cu，Zn，V等元素的富集可能与陆源区富含上述元素的峨眉山玄武岩风化产物的供给有直接关系；微量元素的富集受沉积环境的控制，海水影响较弱时，陆表迁移性较强的元素如Ge，Ga，Th等易于在煤层中富集，海水影响较强环境下煤中V含量较高。此外，毕节地区煤中部分元素异常富集可能与构造活动和成煤后热液改造作用有关。

关键词： 微量元素；富集特征；赋存规律；控制因素；毕节地区

Distribution characteristics，occurrence modes and controlling factors of trace elements in Late Permian coal from Bijie City，Guizhou Province

Abstract:

Based on thirteen exploratory reports for coal mines form Bijie City，Guizhou Province，data about basic coal features such as sulphur content，ash yield，ash composition and concentration of eleven trace elements as Ge，Ga，U，Th，V，Cl，As，F，Pb，Cu and Zn was systematically analyzed and modeled，and the distribution characteristics，occurrence modes and controlling factors of those trace elements in Bijie coal were investigated.In order to obtain a relative accurate content level of those eleven trace elements in Bijie coal，a parameter called “Reserves Weight Coefficient” was applied.Results show that in Bijie coal Pb，Cu，Zn，U and V are abnormally enriched，Ga is relatively enriched，F and Th are slightly enriched while Ge and Cl are both lower than the Clarke Value，concentration of As in Bijie coal is higher than the common Chinese coal but markedly lower than the USA coal.Correlativity analysis reveals that F may occurs in carbonate minerals，Pb and Cu are probably hosted in sulphide minerals and Cu shows a certain degree of organic affinity.Evidence suggests that on the one hand enrichment of Cu，Zn and V in Bijie coal can be attributed to Emeishan basalt in terrigenous province whose content of those three elements are relatively high；on the other hand trace elements enrichment in coal are controlled by sedimentary environment，specifically some elements that migrate easily in continental sedimentation process such as Ge，Ga and Th tend to be of higher content in coal when the seawater influence is weakening.V is enriched in coal when the influence is strong.In addition，some elements’ abnormal enrichment in Bijie coal is believed to be linked with the tectonic movement especially hydrothermal fluid.

Keywords: trace elements；enrichment characteristic；occurrence mode；controlling factors；Bijie city

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