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论文

湖南辰溪高有机硫煤的微量元素特征

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摘要：

采用高分辨率电感耦合等离子质谱(ICP-MS)、X射线荧光光谱(XRF)以及X射线衍射(XRD)等技术分析煤中微量元素、常量元素含量以及矿物成分。结果表明：辰溪晚二叠世高有机硫煤高度富集铀(75.20 μg/g)、铬(407.75 μg/g)、镉(5.01 μg/g)、钒(296.30 μg/g)和钼 (23.19 μg/g)等微量元素，分别是世界煤均值的31.3，25.5，22.8，11.9，10.5倍。高硫、多铁、多黏土矿物的海陆过渡环境是造成辰溪等地高有机硫煤中高度富集U，V，Cr，Mo等元素的原因。U，Mo的富集与有机质、硫、铁和微生物有关，V，Cr的富集与黏土矿物相关；微量元素与有机质、硫以及与分散矿物之间的耦合作用，涉及多种复杂地球化学过程，是导致煤中这几种元素赋存状态复杂的根本原因，也是硫在煤中富集的重要原因。

关键词： 高硫煤；有机硫；微量元素；辰溪矿区

Geochemistry of the trace elements in the high organic sulfur coals from Chenxi coalfield

Abstract:

The ICP MS, XRF and XRD were used to analysis the elements and minerals in the coals.ICP MS analysis show that the high organic coal of Late

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Permian from Chenxi Coalfield, with the organic sulfur content of 7.75% on average, highly enriched uranium (75.20 μg/g), chromium (407.75 μg/g), cadmium (5.01 μg/g), vanadium (296.30 μg/g), and molybdenum (23.19 μg/g), which are, respectively, 31.3, 25.5, 22.8, 11.9, 10.5 times of the average value of the world coal.U, V, Mo, and Cr are also enriched in several other high organic sulfur coals from southern China, resulting from the marine influence and mineral input in the transitional environment.Organic matter, sulfur, iron and microorganisms result in the enrichment of U and Mo, and clay minerals can enrich V and Cr.The coupling effect between the trace elements and organic matter, sulfur, and dispersed minerals, involving a variety of complex geochemical processes, is the cause of the complexity of the occurrence mode of these of elements in the coal and the key aspects of the sulfur incorporation into coals.

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