

论文

马兰2号煤层夹矸微量与稀土元素地球化学特征及其地质意义

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摘要:

运用X射线衍射(XRD)、电感耦合等离子体质谱(ICP-MS)及电感耦合等离子体发射光谱仪(ICP-OES)对西山煤田马兰矿区2号煤层不同粒径夹矸的矿物组成、微量元素、稀土元素及常量元素等地球化学特征进行了分析, 结合元素与矿物间关联性分析对有害微量元素的地质成因过程进行了探讨。结果表明: 夹矸中矿物主要由粗粒级石英、结晶度高的高岭石、细粒级黄铁矿及锐钛矿组成, 不同粒径样品中矿物组成不同; 物源主要为华北二叠纪聚煤盆地北部的花岗岩, 并受华北板块北缘晚古生代火山活动的影响; 有害微量元素Cr, Ni和Cu受高岭石和石英控制, Zn和U分别与黄铁矿和锐钛矿关系密切。

关键词: 夹矸; 微量元素; 稀土元素; 地球化学特征; 地质成因

Geochemistry of trace and rare elements in No.2 coalseam parting in Malan coal mine and its geological implication

Abstract:

XRD, ICP MS and ICP OES were applied to investigate geochemical characteristics of minerals, trace elements, rare earth elements(REEs) and major elements in different grain size partings of No.2 coal seam in Malan Mining area, Xishan coalfield. Based on the correlative analysis between elements and minerals, the geological genesis of concentration of hazardous trace elements was investigated. The results indicate that the minerals of the parting are mainly dominated by quartz with coarse grain size, high crystallinity kaolinite, pyrite with fine grained size and anatase, and the mineral composition varies with grains. The provenance of parting is mainly the granite from the north of North China coal accumulating basin in the Permian period, and it is influenced by the volcanic activities from the north margin of North China plate during the late Paleozoic. The hazardous trace elements, including Cr, Ni and Cu, are mainly controlled by quartz and kaolinite. The elements of Zn and U are significantly correlated with pyrite and anatase, respectively.

Keywords: parting; trace elements; rare earth elements(REEs); geochemistry characteristics; geological genesis

收稿日期 2011-09-15 修回日期 2012-01-19 网络版发布日期 2012-10-29

DOI:

基金项目:

国家自然科学基金资助项目(41072116, 41103052); 2010年山西省研究生优秀创新基金资助项目

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