



Rare earth elements of Coal Seam 5 from Gequan Mine, Xingtai Coalfield

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Abstract

In order to study the rare earth elements (REE) of Coal Seam 5 from Gequan Mine, Xingtai Coalfield, 5 samples were examined using inductively coupled plasma-mass spectroscopy (ICP-MS). The results showed that Σ REE is 205.02 $\mu\text{g/g}$ in average, and the concentration in rock samples is higher than that in coal samples. The concentration is becoming lower and lower along with the profile of Coal Seam 5 from bottom to top. REE distribution pattern of rock samples and lower-middle coal samples is characterized by a "V-shape" curve with obviously Eu negative anomaly and with enrichment of light rare earth elements (LREE). The similarity about REE feature between coal samples and Late Paleozoic sediments in North China Platform reveals that the distribution pattern and Eu anomaly of coal samples are inherited by the source rock.

Key words: Rare earth elements, Geochemistry, Coal Seam 5, Gequan Mine

1. Introduction

The study of the concentration, distribution and mode of occurrence of trace elements in coals is one of the hot-points in present day (Wang and Ren, 1994). REE is one part of trace elements in coals, and its concentration is not very high, mostly is tens to hundreds $\mu\text{g/g}$. Some scholars have done systemic research on it (Eskenazi, 1982; Birk and White, 1991; Seredin, 1996). For example, Zhao *et al.* (2000) introduced the geochemistry of REE in coals from Huaibei Coalfield; Huang *et al.* (1999)

analyzed the geochemistry of REE of Late Paleozoic coals in North China; Dai *et al.* (2002, 2003) studied occurrence and sequential chemical extraction of rare earth elements in coals and seam roofs; Wang *et al.* (1999) discussed the distribution and influence factors of REE.

In this paper we want to study the REE in Coal Seam 5 from Gequan Mine, Xingtai Coalfield.

2. Geological setting

The Gequan Coal Mine is located in Xingtai City, southern Hebei Province. Coal-bearing strata belong to the