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**Preliminary study on the acid-remove rate for trace element from the different rank of coal**

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The degree of concentration of trace elements and the acid-removal rate of elements for the 5 different ranks of coal from 8# coal formation in Shanxi province of China have been analysed and has suggested that the metamorphic degree of the coal had played a big role in the concentrate amount, level and occurrence of trace elements in coal. In general, the higher the degree of metamorphism of the coal is characterized by the lower enrichment number and the lower enrichment degree of trace elements. While the mode of occurrence of trace elements are quite complicated. The proportion of chalcophile elements had been increased due to the influence of post magmatic hydrothermal flows which have occurred widely in the Xishan mine. Furthermore, the level of similarity between the acid-remove rate of trace elements and its first ionization energy was quantifiably obtained using Matlab software, guided by Ergodic theory and element periodic law. Consequently, it was proposed that the level of similarity would decrease when metamorphism of the coal is higher. Most of the elements rejected by the Matlab software are evidently enriched trace elements and those that show complexes contained in more than two minerals. But, elements not rejected by Matlab software are those that occurred as the combined state of minerals.

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