Study of geochemistry and mineralogy in Karmozd coal Basin Central Alborz, Mazandran Province.

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Abstract: The Karmozd coal mine in Mazandaran Province (Iran) is one of the largest and oldest active coal mines in Central Alborze Coal Basin. A complete geochemistry and mineralogy characterization of Karmozd coal has been conducted in summer, 2005 by sampling of coal, coal tailing and country rock coal Basin. The coal layers (Lias) is embedded in the middle of Karmozd lithostratigraphic unit. It is composed of a sequence of fine to coarse grain sandstone, and fine grain conglomerate along with shale and argillite. These coals are classified as low sulphur, ash group. Mineralogy and geochemistry results indicate that, excluding P₂O₅, all main oxides are related to the existing minerals within the coal layers. So that on the basis of correlation matrix, cluster analysis and principle component analysis (PCA), a strong and meaningful relationship exist between the amount of "SO₃-Fe₂O₃" and "CaO-MgO-MnO" which classify them into two distinct groups. The first group is originated from syngenic pyrite and the second one from epigenetic calcite and dolomite. Presence of minerals such as clay minerals, quartz and anatase with detrital origin cause the relationship between oxides of "SiO₂", "Al₂O₃", "Na₂O+K₂O" and "TiO₂" become much weaker than other oxides. On the basis of our study, the amount of minor and rare elements except Cl, are related to inorganic material in coal. As the origin of "heavy metals", "V-Rb" and "Y, U, Th, W, Mo, Zr, Ce, Nb, Ba and Sr" related to sulfide minerals, clay minerals and rock source respectively. The concentratin of TiO₂ and most minor and trace elements in Karmozd’s Coal are much more than that of the world coals.

Keywords: Geochemistry, mineralogy, Coal, Karmozd coal Basin, Central Alborz, Iran

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