Mineralogical study of the Ghoznavi coal mine, eastern Alborz

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Abstract: The Ghoznavi coal mine, as an active mine in Golestan Province, is located about 45km south of Azadshahr. Coal extracted from first (I) and third (III) coal layers. XRD and SEM/EDS studies indicate the presence of quartz and clay minerals as major and pyrite (arsenopyrite), gypsum, jarosite (natrojarosite), goethite, hematite, plagioclase, K-feldspar, rutile and corundum as minor minerals. After coal formation, jarosite, natrojarosite, hematite and goethite were formed due to the alteration of primeray iron-bearing minerals, such as pyrite. Berlinite, rutile, corundum, plagioclase and K-feldspar are not syngenetic minerals in the studied coal and they were transported from the outside to the sedimentary basin during precipitation of the organic materials. Presence of the quartz, plagioclase, K-feldspar, rutile and corundum seem to be generated from older igneous units such as Soltan Meydan basalts and alkaline granite in the Khoshyeilagh region, which are transferred to the lagoon. There are two generations of pyrite in the coal layers, including syngenetic euhedral pyrite, which is distributed throughout the coal matrix, and subhedral to anhedral pyrite as fissure filling. FT-IR study shows the presence of silicate and clay minerals, aromatic C=C stretching vibration related to the organic materials, and OH-bands related to the OH-bearing minerals.

Keywords: Mineralogy; Ghoznavi mine; coal; Eastern Alborz.