

Geology and geochemical characteristics of upper Triassic - lower Jurassic Galandrud coals of the Central Alborz in Northern Iran

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This paper presents the characteristics of regional geology and geochemistry of the Galandrud coal samples from Central Alborz in northern Iran. Coals of this region within carbonate sediments of Shemshak formation with the age of upper Triassic – lower Jurassic have been deposited in the form of 32 coal beds. These coals are bituminous coals and have low moisture (0.88-1.37%) contents, high ash (12.2-18.6%) yields, a broad range of total sulphur contents (0.45-1.05%_{wt}), gross calorific values (7430-8830 kcal/kg) and high volatile matters (28.3-39.3%). The mineral matter of Galandrud coals is mainly made up of dolomite (more than 80%) with amount siderite, sphalerite, galenite, quartz and pyrite. Macerals forming organic part of these coals are mostly of vitrinite (collotelinite) and inertinite (fusinite) group in which the pores and fissures have been filled with carbonate and silica. Major elements have been concentrated in compound of minerals formed in coals of Central Alborz zone. Concentration some trace elements of Galandrud coal samples including Bi, Co, Cs, Cr, Cu, Eu, Ga, La, Li, Mn, Mo, Nd, Ni, Rb, Sm, Sr, Th, V, W, Y and Yb show anomaly when compared to the world coal values. These elements have organic or inorganic origin and their concentration relative to type of based sediments in central Alborz and hydrothermal activities. In Galandrud coals, as the percentage of coals volatile matters decrease from surface layers toward the bottom layers, the rank of coals increases. Friction metamorphism is involved in the process of change in coalification rank of coals in Galanderud region. This is due to the presence of tectonic pressures and activity of sub-faults, in addition to regional metamorphism.

Key words: *Galandrud, trace elements, bituminous coal, Shemshak formation, Central Alborz, Iran*