Mineralogy and genesis of the Mishdovan refractory ore bodies Bafgh, Central Iran

A.H. Kohsary*, S.H. Mojtahedzadeh, M. Dehghani Ahmadabad

Faculty of Mining and Metallurgical Engineering, Yazd University, Yazd. Iran

(Received: 16/10/2009, in revised form: 8/2/2010)

Abstract: Bafgh Mishdovan ore body is located in the Central Iranian zone and is recognized as potential of the sillimanite group minerals. In this region, the outcrops of the different formations can be observed which mainly consist of the Precambrian metamorphic rocks. Silimanite group minerals are existed in the schistic rocks. The area is located in a tectonized zone and subjected to regional metamorphism then intruded by igneous plutonic rocks. The study area has 95 km² coverage and according to quality and grade of sillimanite group minerals can be divided to four different mineral zones. Primary exploration activities have been carried out by digging of the trenches and test pits. Samples were taken systematically from outcrops, trenches and test pits. In order to recognize of the ore body (via mineralogy studies), some samples were sent to the laboratory for thin section studies and also XRD and XRF analysis. Based on these investigations, it is verified that the refractory minerals are consisted of sillimanite and kyanite and rarely andalusite. Based on the hosted rocks type and their metamorphic stages, thin section studies and XRD analysis, the phase transition of the primary andalusite into sillimanite and kyanite due to the high temperature-contact metamorphism can be justified. Also regarding the XRD analysis, only one sample contains some kyanites, so it seems that ore bodies is low grade and beneficiation of this industrial minerals face many difficulties or may not be feasible.

Keywords: Mineralogy, Andalusite, Sillimanite, Kyanite, Refractory minerals, Shist, Bafgh Mishdovan mineral deposit.