Investigation of mineralogical, textural and geochemical properties in Lead-zinc prospect area of Kalatepiale, northeastern Esfarayen

M. Farahmand¹, A. Malekzadeh Shafaroudi², M. Javidi Moghaddam¹

1. Department of Geology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
2. Department of Geology and Research Center for Ore Deposit of Eastern Iran, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

(Received: 18/10/2020, in revised form: 8/12/2020)

Abstract: Kalatepiale prospect area is located in northeastern Esfarayen, North Khorasan Province. Geology of the area includes sequence of sedimentary units of dolomitic limestone (Upper Jurassic), microconglomerate, limestone, sandy limestone, conglomerate (Cretaceous) and marl (Tertiary). The mineralogy of ore is simple and include pyrite, galena and sphalerite. Mineralization is formed as vein-veinlet, breccia and primary replacement textures in dolomitic limestone and limestone units. Galena occurred as fine (in breccia texture) and coarse-grains (in replacement texture) with cubic-octahedral form. Also, minerals of sphalerite and pyrite (with approximately 100 microns in size) are present within galena as inclusions. Due to the great influence of oxidation and weathering processes on the primary ore, secondary carbonate, silicate and oxide mineralization extensively scatared and formed smithsonite, hemimorphite, cerussite, hematite and goethite. Calcite and dolomite are dominant gangue mineral associated with mineralization, with lesser amounts of barite and quartz. Main alterations consist of calcitization and dolomitization. Mineralized veins are clearly epigenetic and occurred along fault zones with trending northwest–southeast/vertical dip. The range of variation in the geochemical analysis is as follows: Pb from 73 to 42000 ppm, Zn from 128 to 57000 ppm. As from 2 to 254 ppm and Cu from 4 to 172 ppm. Host rock, mineralization, properties of galena mineral, type of wall rock alteration, lack of relation with igneous activities and also, the geochemical evidence of Kalatepiale prospect area is similar to the Mississippi valley-type deposits.

Keywords: Mineralization; geochemistry; Lead-Zinc; Kalatepialeh; Esfarayen.

Monte فارسی اصل مقاله از صفحه ۵۴۴ تا ۵۶۲ در این شماره به چاپ رسیده است

* Corresponding author; Tel:09151192132, Fax:05138797275, Email: shafaroudi@um.ac.ir