Mineralogical and Chemical Composition for the Iron and Sulphid Deposits, Discovered in Sirghaya Area-Syria, and their Tectonic Position by Interpretation of Space Images

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Abstract:

The different studies and investigations that we have carried out since 1981, for the dolomitization, silicification and mineralization phenomena in Zabadani and Sirghaya Areas located 60km to the north west of Damascus has led to discover many sites of rich iron ores and sulphids for colored minerals within the dolomitic limestones in the upper Jurassic system for the first time in Sirghaya area in1989. These sites look as dykes and oval tubes, the dimensions of them may reach 10x15m and they extend in depth in vertical shapes, as the mining digging works showed. The most important of these sites are Ein Al-Ramlah and Dahr Al-Khanzeer, Dahrt Tofahta and they may form potential outcrops ore bodies for these mineralizations.

The analyzing and interpretation of space images (200000/1 and 100000/1) scale, which were processed by phototon and lineaments enhancement devices, showed the complex tectonic structure to the severely faulted and tectonic deformations area, which is restricted by two depression faults (Sirghaya fault from the east and Lebanese Boukaa one from the west), these two faults are followed by many other ones, their extension ranges from several tens of meters to tens of kilometers.

The studies showed that the mentioned phenomena and deposits are connected with secondary faults of transverse and eastern north direction, their cross points are with the other faults and some small annular structures.

The comprehensive laboratory study (petrography, mineralogical, geochemical and genesis characteristics) which I have executed for more than 45 samples of these ores in the Institutes of Russian Academy of Science and the Geology Research Institute in Moscow, 1991, showed that these ores are rich of iron metals (Hematite, Hydrohematite, Hydrogeothite Lepidocrocite and Siderite), they are replacement minerals formed as a result of oxidation processes for other minerals formed in conditions of more replacement potentiality. They are existed in different shapes: cubes, globular, needle-shaped, nest-shaped, concentrates of different dimensions or as encirclements, veins and mortar.

It has been noticed also the copper minera,l which is composed of Chalcopyrite, Malachite, Azurite, Bournite, Covelline, Cuprite. Zinc mineral (Sphalerite, Smitsonite),

Lead (Galena, Serocite), Arsenic (Arsenopyrite and lolengete), in addition to many other minerals such as: Ankerite, Calcite, Dolomite, Barite, todorokete, Pyrite, Chlorite, Quartz and others.

The chemical analysis showed the following rates: Fe_2o_3 (70-84%) and this is a high rate, Sio_2 (2.4 -14.2%), Al_2o_3 (0.13- 2.95%), Tio_2 (0.02-0.13%) , P_2o_5 (0.013-0.59%). And it refers to the rate rise for some trace elements as Zinc (Zn), in average 0.22%, copper 0.01%, lead 0.007%, arsenic 0.02%, cobalt 0.032% and nickel 0.008% in addition to Mn, Br, V, Gr, Bi, Be, Mo, Sn, Ag and rarely Cd, Ge and Ga.

The tectonic and geologic position of the mentioned deposits and their mineralogical and chemical composition, and their minerals existence shapes refer to that their origin is connected with hydrothermal solutions. The studied part of them forms an iron cap for the sulphid deposits, in the depths, for elements as Zn, Cu, Pb and As, which may form potential ore bodies for these minerals.

The discovery of these phenomena, for the first time in Syria, gives an important motivation and new concept for studying these deposits and discovering them by modern technical means in the moving areas of Syria.