

SHORT COMMUNICATION

Mineralization of Kumhar Magnesite, Hazara, NWFP

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Kumhar magnesite deposit is 20 km. north west of Abbottabad, near Kumhar village (43F/4). It occurs as irregularly shaped lenses in grey dolomite and dolomitic limestone of Abbottabad formation in two separate mineralization zones [1].

Present work deals with the geochemistry of magnesite and the host rock samples from Kumhar to interpret the origin of their magnesite.

Earlier workers [2,3] have considered these deposits as hydrothermal replacement of the dolomite and dolomitic limestone, but the evidences of the present work suggest sedimentary origin for Kumhar magnesite.

The constancy in chemical composition throughout the entire horizon favours sedimentary origin for Kumhar magnesite [5]. Chemical composition of average magnesite in all 14 lenses is nearly uniform (Table 1).

TABLE 1. CHEMICAL ANALYSES OF KUMHAR MAGNESITE.

	Fe	SiO ₂	Al ₂ O ₃	CaO	MgO	L.I.O.
Average % of 256 samples from 14 lenses Shaji, 1972).	0.60	1.00	0.1	1.66	45.53	50.27
Average of Kumhar magnesite samples.	0.24	1.06	0.80	0.91	48.28	50.01
Average of Kumhar limestone samples.	0.28	0.46	0.88	29.54	21.98	46.84

Siddiqi *et al.* [1] and Shaji's [3] assumptions that Mansehra granitic activity was responsible for magnesitization of Kumhar carbonate sediments is contrary to the physico-chemistry of silicate systems [5]. Low Mg content of acidic magma is not enough to supply Mg-rich solution in such huge quantities which could result in deposition of Kumhar magnesite of over 11 million tons. Basic intrusions encountered in the field as sills and dykes also can not act as a source of Mg-rich solution because magnesium is selectively used in the earlier stages of crystallization olivines, pyroxenes etc., [6].

It is concluded that Kumhar magnesites were not formed by solutions coming from external source but must have been formed internally. The presence of large reserves of marine phosphorites in the same stratigraphic horizon at Kakul, Lagarban, Dalola etc. also suggests the possibility

of an all pervading upper proterozoic-lower Paleozoic littoral sea bordering the North Indian cratonic mass, extending from western Rajasthan in the west, Kashmir and Hazara in NNW and Garhwal and Nepal Himalaya in the north [7]. The presence of Cambrian Hyolithes fossils near Sherwan [8] and similar to the Cambrian Hyolithoses reported [9] from Hazara formation near Abbottabad establishes homotaxial relationship between magnesite and phosphate rich areas of Abbottabad.

Since the sea has vast quantities of magnesium and the nature of the carbonate sediment is largely controlled by MgO/CaO ratio of the present water, which precipitates in the order of aragonite-magnesium calcite-calcium dolomite-dolomite-magnesite [10] sums responsible for the origin kumhar magnesite. Higher MgO/CaO ratio (average = 34.91) in Kumhar magnesite further attributes. to the biogenic as well as inorganic precipitation of CaCO₃ leading to increase in the magnesium content and ultimate precipitation of magnesite in large quantities.

Key words: Magnesite, Mineralization, Hazara.

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