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Mineralogy and geochemistry of the hydrate sulfate minerals in relation to the black shales, Qroqchy, Mymeh, Isfahan

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Abstract: Qroqchy area is located northwest of Isfahan, in the central Iranian structural zone . The Nayband black shale is a significant geological unit which is widespread occurrences in the study are .Weathering process lead to black sale alteration and formation of acidic pool. The pool is located on the black shale basement. Around of the pool sulfate minerals occur with various colors. The aim of the research is identify rare sulfate minerals around acidic pool and investigation of formation mechanism of these minerals. On the base of XRD results ,the most important minerals are: (ferricopiapite) hydrous iron sulfate, (tamarugite) hydrous sodium sulfate, (kieserite) hydrated magnesium sulfate, (blodite) sodium ,magnesium hydrous sulphate , and gypsum. Weathering process and decomposition of black shale minerals lead to release sulfate mineral components. Presence of pyrite in black shale is an effective factor increasing weathering and resulting acidic conditions. Acid drainage leads to decomposition of black shale and released cations of crystalline framework. Deposition of secondary minerals resulted acidic equilibrium. Geochemically, the Qoroqchi black shale characterized by LREE enrichment (ΣLREE = 140/463) and HREE depletion (ΣHREE = 5/037ppm), in comparison NASC has similar pattern.

Keywords: *hydrated sulfate minerals; black shale; geochemistry; Qroqchy area.*

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