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NEW DATA ON SECONDARY MINERALS OF KAN-I-GUT CAVE MINE (CENTRAL ASIA)

Bazarova E.P.¹, Markova Yu.N.²

¹ *Institute of the Earth Crust, Siberian Branch of Russian academy of Sciences, Russia
bazarova@crust.irk.ru*

² *Institute of Geochemistry, Siberian Branch of Russian academy of Sciences, Russia
markova.julia.igc@yandex.ru*

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The Kan-I-Gut cave mine (or Kon-I-Gut, or Mine of Death) located in the south-west of Kyrgyzstan on Sary-Too massif and lies in the ore-bearing rocks of hydrothermal metasomatic deposit of iron, silver and lead. Bearing rocks are massive limestone of Middle Devonian – Lower Carboniferous [Filippov, Mavlyanov, 2013], where eight ore bodies, the sulfide bed, are formed. Kan-I-Gut is the only karst cavity combined with the great number of artificial mines. The cave is practically arid; the temperature in it reaches the 15^oC [Maksimov, 1999]. In present time the most detailed mineralogical data summary for the object is the article by Petrov and co-authors [Petrov et al., 2013]. Our manuscript provides the new information on secondary (hypergene) minerals of Kan-I-Gut, which was observed during 2014 expedition. The mineralogical content of the samples was determined by X-ray analysis at the Institute of the Earth Crust SB RAS in Irkutsk (analyst Uschapovskaya Z.F).

The wide range of secondary minerals belonging to sulfides, carbonates, oxides, sulphates and silicates classes is distinguished at Kan-I-Gut cave mine. Calcite and aragonite are the main representatives of the carbonates class. The calcite forms the sinter crusts and helictites; the aragonite forms multilayered crusts on the surface of dry pond. The other carbonate minerals such as cerussite, malachite and smithsonite were found in small quantities [Petrov et al, 2013]. Among the representatives of oxide class the most common are limonite, goethite and hematite, composing a large amount of loose formations. Rare finds of quartz, chalcedony and opal described in [Petrov et al, 2013; Tsilek, Gromas, 2013]. As for manganese oxides, besides pyrolusite and psilomelane mentioned in [Petrov et al., 2013], we discovered cryptomelane presented by the soft black fibrous asbestos-like aggregates. The sulfite class includes gypsum and hexahydrate composing the crust on the walls; rotsenit and melanterite previously described in [Bazarova, 2014]; epsomite forms the fluff-like and hair-like aggregates and fibroferrit, jarosite, solmonokit and copiapite, included in the loose deposits content. Silicates are presented by hemimorphite [Tsilek, Gromas 2013], and we are also marked the ferruginous sepiopite, which is enter into the composition of the cave clay simultaneously with fibroferrite.

In general, the classical karst cave minerals (calcite, aragonite) are poorly developed in Kan-I-Gut, but water ferrous sulfate and magnesium mostly confined to artificial cavities and sections of primary galenite-marcasite ores are widespread. In cave mine the manganese oxides are also common which, apparently, are the product of material redeposition under the intrusion into the host rocks of hot solutions. A great number of minerals untypical for the main part of the carbonate karst caves were formed in Kan-I-Gut due to the peculiarities of composition of the host rocks and the microclimate of the underground cavity. Evidently, the minerals of this object can not be referred to the cave formations and should be investigated as the residual soil minerals of ore deposit.

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