The Ermakovskoe fluorite-beryllium economic deposit in the Western Transbaikal Region (frequently named as Ermakovka) is a high-grade and large location not only for Russia but for the whole world. This deposit, the most interesting in geology and mineralogy, has no analogs worldwide and is very important in the study and preservation of mineral diversity. It is unique not only in geological singularities but museum and mineralogy aspects: aesthetic quality of ore specimens and diversity of mineral assemblages with numerous beryllium silicates: bertrandite, phenakite, eudidymite, meliphanite, leucophanite, milarite, bavenite, and helvite. Therefore, this deposit earns the status of global geological memorial (Geological memorials..., 1998). Moreover, it is located within the ecological buffer zone of Baikal Lake requiring special admission of the state ecological expertise for human activities.

Beryllium, the major economic ore constituent, is a crucial element. Owing to its unique properties, it is essential in nuclear, aerospace, and electronic...
industry and electric, telecommunication and other high-tech branches (Klapovskaya, 2008). Geographical and economic location of the deposit is profitable. It is situated 180 km ESE of Ulan-Ude and 45 km of the Bada station of the Transbaikal railway in the central part of the Western Transbaikal region in the southwestern part of Republic of Buryatia with advanced infrastructure (Fig. 1). Owing to economic and high scientific value of the deposit, its further operation should be accompanied with the systematic selection of the collection of ores and host rocks sampled by qualified specialists similar to those during operation in 1975—1989.

Brief History of Investigation and Mining

The deposit was discovered by G.A. Ermakov using prospecting guides elaborated by A.I. Ginzburg and his staff in the course of the 1:200,000 geological surveys in 1964—1965. For example, all fluorite prospects were recommended to be examined for beryllium with portable beryllometer, which is based on the neutron flux resulted from $\gamma$-irradiated Be. When fluorite prospects of the future Ermakovka were measured, the Be grade was so high that geologists suspected instrument failure. However, instrument readings were verified.

The deposit was explored in 1965—1975 by the Ermakovka exploration crew of the Buryatia Geological Bureau supervised by V.I. Galchenko. Initial drilling of zone I showed that orebody sharply pinched out and doubts began to arise in prospectiveness of the location. However, N.P. Zabolotnaya, a supervisor of the VIMS beryllium group, enforced continuation of exploration as a result of which nine ore zones were delineated. After termination of exploration in 1975, the deposit was transferred to the Transbaikal Mining and Processing Works of Ministry of Medium and Special Machine Building of the USSR and was open-cut mined for beryllium to 1989. Currently, the open pit (Fig. 2) stopped at the 836 m level is partly flooded, but the dumps attractive in mineralogy were retained (Fig. 3).

4. Sheaf-like split crystal of milarite. 5 x 3.5 cm. Specimen: I.V. Pekov, #4722. Photo: M.B. Leybov.

7. Radiated columnar aggregates of bavenite enclosed in purple fluorite with reddish microcline. 6 x 4 cm. Specimen: I.V. Pekov, #3973. Photo: M.B. Leybov.

8. Spherulite of phenakite on fluorite with microcline and pyrite. 5 x 3 cm. Specimen: I.V. Pekov, #3872. Photo: M.B. Leybov.


33. Spherulite crust and isolated large spherulites of white phenakite (2.5 cm in diameter) on the wall of fracture cutting pink microcline. Phenakite is powdered by late lilac fluorite and negligible pyrite. 8 x 6.5 x 4 cm. Found in 2014. Visual identification. Specimen and photo: V.V. Levitsky.

34. Slightly split crystal of phenakite (1.5 cm). Found by O.E. Kudryavtseva, 2009. Specimen and photo: M.M. Moisseyev.

35. Lilac spherulites of phenakite (up to 1.2 cm) colored by fluorite inclusion in growth zones. Specimen and photo: B.Z. Kantor.
36. Light spherulites of **phenakite** (up to 2 cm in diameter) on the wall of carbonate-fluorite-phenakite veinlet (calcite leached by acid). Image width 6.5 cm. Found in early 1990th. Specimen and photo: V.V. Levitsky.

37. Spherulites and isolated crystals of **phenakite** intergrown with fluorite on microcline of 12 cm in height. (a) Fragment, (b) general view of specimen. Ore zone II, open pit of Ermakovka deposit. Specimen and photo: D.I. Cherepanov.