

EGU21-14847

<https://doi.org/10.5194/egusphere-egu21-14847>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Ore-controlling dike complexes of the gold-rare metal deposit Vladimirskoe (Eastern Sayan)

Brian Nharara^{1,2}, Eugenia Airiyants¹, Ol'ga Kiseleva¹, Dmitriy Belyanin^{1,2}, Petr Roshchektaev³, and Sergey Zhmodik^{1,2}

¹Sobolev Institute of Geology and Mineralogy Siberian Branch Russian Academy of Sciences, Russian Federation (briantnharara@gmail.com)

²Novosibirsk state university

³OOO Riphey Russia

Vladimirskoe gold-rare metal deposits are located in the Urik-Kitoiskaya gold zone, at the edges of the Neoproterozoic age Gargan microcontinent, in the southeastern part of the Eastern Sayan. Gold mineralization is localized in sheared, beresitised mineralized zones among granite gneiss of the Gargan Group (NARg). The width of the zones is 3-10 m and the length is up to 800 m. The material composition of the ores is sulfide-carbonate-quartz. The main ore minerals are pyrite, chalcopyrite, pyrrhotite, galena, sphalerite, as well as tellurides and sulfosalts of silver, lead, and bismuth. The main minerals at the deposit are gold, associated - silver, and bismuth, associated with sulfide mineralization. Average gold grades in ores are 7-12 g / t.

Mineralized ore zones are associated with faults, and are often localized at their intersection with dike complexes. Several fault systems are identified in the deposit. The first-order fault system is a right-lateral dip-slip with a submeridional strike. The second-order system has a northwest strike and represents zones of viscous faults, expressed by zones of cleavage, beresitisation, silicification, and sulfidation, which are associated with gold mineralization.

There are two types of dike complexes within the region. The first dike complex of the barun-holba subvolcanic complex (O-S) has basic composition. Dikes are widespread throughout the entire area and are characterized by diabase porphyrites, metabasalts, and more rarely, basaltic andesite porphyrites. The rocks have a porphyry structure with phenocrysts (1-3 cm) characterized by plagioclase, altered to form epidote and muscovite. Large porphyry segregations up to 10 cm, bearing traces of deformation processes are observed in some cases. The groundmass has a fine-grained, microlepidogranoblastic structure and is composed of a secondary epidote-chlorite-albite aggregate.

The second dike complex is less pronounced and is characterized by felsic dikes belonging to the Early Paleozoic Holba complex. It is located in the southeastern part of the region and is characterized by granite-porphyries, leucocratic pegmatoid granites, and dacites. Dikes of felsic composition have a felsic structure caused by microliths of albitised plagioclase, biotite, and secondary minerals (chlorite, epidote, amphibole, calcite).

Dikes and dike belts are the ore-controlling structures of gold mineralization. In intersecting zones of a northwestern strike, gold mineralization is concentrated near dikes and gradually fades away as we move from them. The greatest development of mineralized zones and the associated quartz-vein ore mineralization can be observed at the intersection of fault zones with dikes. In this case, ore columns with a thickness of 20-50 m formed, extending to a depth of 3 km. Vladimirovskoe deposits belong to vein-dike ore-magmatic systems, their source of ore matter is of deep origin.

This work is supported by RFBR grants: No. 19-05-00764 and the Russian Ministry of Education and Science.

References:

Gordienko I.V. et al., // *Geology Ore Deposits*. 2016. V. 58, № 5, P. 405-429.

Seminsky Zh. V. et al. // *Proceedings of the Siberian Branch of the Section of Earth Sciences of the Russian Academy of Sciences*. T. 45, N. 2. 2014. P. 19-34.