

STRUCTURE AND PGE-MINERALIZATION OF THE LUKKULAISVAARA INTRUSION (OULANKA GROUP OF LAYERED INTRUSIONS, NORTHERN KARELIA).

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The Lukkulaisvaara Intrusion belongs to the Oulanka plutonic Group. The intrusion was dated by U-Pb as 2442 ± 1.9 m.a. old. It cuts rocks of the Archean granite-migmatite-gneissic basement and is disconformably overlain by Proterozoic metavolcanic rocks. The thickness of the layered body does not exceed 4600 m. Its weight-average is comparable with magma of the marianite-boninite series. The fine-grained gabbro-norite forms large and small lenticular bodies that means rapid crystallization during injections of fresh magma. Structures in which fine-micrograined rocks occur do not differ from «potholes» in morphology and the set of structure-forming rocks. Two genetic types of sulfides are distinguished: (a) few sulfides of the magmatic stage present in the fresh rocks often with magmatic quartz and biotite; (b) metasomatic sulfides assemblages. The richest sulfide and platinum mineralisation was generated during the metasomatic stage and is related with potholes. The amount of the sulfides in the metasomatites is very different (1 - 30 vol%). The concentration of noble metals is unsteady in the metasomatites (0.3-10 ppm Pt; 0.42-66 ppm Pd). Ore metasomatites were formed under the action of highly mineralized reducing hydrothermal media. Nd-Sr isotopic data suggest that the metasomatites were formed simultaneously with formation of layered intrusion 2442 Ma during autometasomatic process due to reworking of intrusive rocks by mantle fluid with $\epsilon_{Nd} = +2.1$ and initial $87Sr/86Sr = 0.7028$. At the same time the sources of the fluid and intrusive rocks according to isotopic signatures could have been different in their nature.