

Results of mineralogical and petrographic study of siliceous rocks of southern Sakhalin

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Abstract

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Abstract. The paper presents the results of a mineralogical and petrographic study of siliceous rocks from the Kholmskaya and Kurasiyskaya Formations of southern Sakhalin. The study was carried out using macroscopic description, polarized-light microscopy, scanning electron microscopy with energy-dispersive microprobe analysis, as well as X-ray diffraction and simultaneous thermal analysis. Rocks of the Kholmskaya Formation are represented by silicites with a finely dispersed siliceous groundmass, quartz, feldspars, hydromica, chlorite, hematite, calcite, plant detritus, and carbonized organic matter. Rocks of the Kurasiyskaya Formation are opoka-like and are characterized by cryptocrystalline and amorphous siliceous groundmass, cristobalite, tridymite, quartz, feldspars, hydromica, chlorite, hematite and organic matter. Scanning electron microscopy revealed pyrite microconcretions and idiomorphic pyrite microcrystals, microglobular silica forms, areas enriched in Na, K, S, and Cl, as well as carbon-rich organic residues. Using the X-ray diffraction analysis, it was established that quartz predominates in the rocks of the Kholmskaya Formation, whereas cristobalite and tridymite predominate in the opokas of the Kurasiyskaya Formation. The obtained data clarify the mineral composition, silica forms and pore microstructure of siliceous rocks of the Kholmskaya and Kurasiyskaya Formations of southern Sakhalin.

Keywords:

southern Sakhalin, Kholmskaya Formation, Kurasiyskaya Formation, siliceous rocks, opoka, quartz, cristobalite, tridymite, scanning electron microscopy, X-ray diffraction, thermal analysis

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