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New Mineral Names

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Abstract

This issue of New Mineral Names provides a summary of five new species: pohlite, muonionalustaite, medvedevite, gysinite-(La), and nioboheftetjernite.

Pohlite

Pohlite (Kampf et al. 2022), ideally $Pb_7(IO_3)(OH)_4Cl_9$, is named in honor of Demetrius Pohl, who had collected the sample containing the eponymous mineral. The mineral was found in a cavity of an oxidized portion of a quartz vein. The small blades (up to 4 mm in length) are transparent and colorless.

The La Compañía mine is a historic mine located in the Atacama Desert of northern Chile. It is believed to have been in operation as early as the 16th century, and was one of the largest producers of silver in South America during the Spanish colonial period. In the 19th and early 20th centuries, the mine was modernized and expanded by foreign mining companies, which continued to extract silver, gold, and other minerals from the site. By the mid-20th century, the mine was thought to be largely depleted and was eventually closed. Recent efforts to reopen the mine and explore its remaining mineral deposits have been met with opposition from local communities and environmental groups concerned about potential impacts to the surrounding ecosystems.

Pohlite crystallizes in space group $P\bar{1}$ with a = 7.3366(5) Å, b = 9.5130(9) Å, c = 16.2434(15) Å, α = 81.592(7)°, β = 84.955(7)°, γ = 89.565(6)°, V = 1117.13(17) Å^3, and has a calculated density of 5.838(2) g/cm^3. The mineral and its name have been approved by the Commission of New Mineral Nomenclature and Classification (NMNC) of the International Mineralogical Association (IMA 2022-043). One co-type is deposited in the American Museum of Natural History, New York, U.S.A., with catalog number 115471. Two are deposited in the collections of the Natural History Museum of Los Angeles County, Los Angeles, California, U.S.A., with catalog numbers 76251 and 76252.

Muonionalustaite

Muonionalustaite (Holtstam et al. 2021), ideally $Ni_3(OH)_4Cl_2·4H_2O$, is named after the well-known Muonionalusta meteorite. Muonionalusta is a small village in Norrbotten County, Sweden, which is close to the Finnish border. Muonionalusta is Finnish for "the area under the Muonio (river)." The muonionalustaite crystals are not authigenic and are thought to have formed from weathering in soils with high Cl content.

The Muonionalusta Meteorite (octahedrite) was discovered in northern Sweden in 1906 and is one of the oldest iron meteorites found (~4.56 Ga). However, the initial fall was likely in the Pleistocene. The meteorite is composed mainly of iron-nickel alloy, with high amounts of Ni (5–7%) relative to Fe (92–94%). Small amounts of other trace elements, such as cobalt, phosphorus, and sulfur, also occur.

Muonionalustaite crystallizes in space group $C2/m$ with a = 15.018(3) Å, b = 3.1490(6) Å, c = 10.502(3) Å, β = 101.535(15)°, and V = 486.62(19) Å^3, and has a calculated density of 2.67(1) g/cm^3. The mineral and its name have been approved by the CNMNC (IMA 2020-010). The holotype material is deposited in the type mineral collection of the Department of Geosciences, Swedish Museum of Natural History, Stockholm, Sweden with catalog numbers GEO-NRM 20050144 and 20050145.

Medvedevite

Medvedevite (Shablinskii et al. 2022), ideally $KMn^{2+}V_2^{5+}O_6Cl·2H_2O$, is named in honor of the Russian geologist and chemist Robert Alexandrovich Medvedev (1939–2005). The new mineral was found in a fumarole from the 2012–2013 Tolbachik fissure eruption. Medvedev was an accomplished field and lab geologist who developed techniques for improved gold extraction techniques from low concentration gold ore and for measuring gases in rare earth metals.

Kamchatka, located in the Far Eastern part of Russia, is home to one of the largest concentrations of active volcanoes in the world. Other minerals known from this region include koksharovite, shcherbinaite, and ziminaite (from the Beymianny stratovolcano in central Kamchatka) and tazieffite and mutnovskite (from the Mutnovsky stratovolcano in southern Kamchatka). Tolbachik is a large shield volcano located in the southern region of Kamchatka and has been the most mineralogically productive volcano with 268 valid minerals are known to occur here, and of those 132 minerals are type localities (as of February 10, 2023).

Medvedevite crystallizes in space group $P2_1/c$ with a = 7.1863(2) Å, b = 10.1147(3) Å, c = 12.7252(4) Å, β = 106.243(3)°, V = 888.04(5) Å^3, and has a calculated density of 2.69 gm/cm^3. The mineral and its name have been approved by the CNMNC (IMA 2021-082a). The type specimen is deposited in the Mineralogical Museum of Saint-Petersburg State University, St. Petersburg, Russia under catalog number 1/19900.

Gysinite-(La)

Gysinite-(La) (Wu et al. 2022), ideally $PbLa(CO_3)_2(OH)·H_2O$, is named for being the lanthanum-dominant analog of the mineral gysinite-(Nd). The mineral was found in a lujavrite (late-stage volcanic alkaline nepheline syenite) containing characterized by elevated contents of lithium, beryllium, zirconium, rare earth elements, niobium, thorium, and uranium. The mineral was found in the Saima alkaline complex, Liaoning Province, northeast China. Since 2015, the area has been mined for Nb and other rare earth elements, but was previously mined for U.

Gysinite-(La) crystalizes in space group $Pmcn$ with a = 5.0655(2) Å, b = 8.5990(3) Å, c = 7.3901(4) Å, V = 321.90(2) Å^3, and has a calculated density of 5.007 g/cm^3. The mineral and its name have been approved by the CNMNC (IMA 2022-008). The type material is

* All minerals have been approved by the IMA CNMMC. For a complete listing of all IMA-validated unnamed minerals and their codes, see http://cnmnc.main.jp/ (click on "IMA list of minerals").

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deposited at the Geological Museum of China, Beijing, China, under catalog number M16133.

Nioboheftetjernite

Nioboheftetjernite (Lykova et al. 2021), ideally $ScNbO_4$, is named for being the niobium analog of heftetjernite ($ScTaO_4$). The mineral was found in a museum specimen labeled as "thortveitite" in the collections of the Canadian Museum of Nature (CMNMC 51710). Prior to being in the collection of the CMN, it was part of the French National Museum of Natural History. It is thought to have been collected from the Befanamo pegmatite. This pegmatite is within Antananarivo Province, Madagascar, an area known for rich mineral diversity (168 known minerals, with 7 type locality species).

Nioboheftetjernite occurs as anhedral grains and very crude elongated crystals up to 200 µm in length and inter-grown with rossovskyite, ilmenite, and rutile. All four minerals are visually indistinguishable in hand sample. Positive identification was first performed with scanning electron microscopy and energy dispersive spectroscopy, and suitable single crystals were selected for single crystal diffraction studies.

Nioboheftetjernite is monoclinic, $P2/c$, a = 4.7092(3) Å, b = 5.6531(4) Å, c = 5.0530(4) Å , β = 90.453(3)8°, and V = 134.515(17) Å^3, and has a calculated density of 5.855 g/cm^3. The mineral and its name have been approved by the CNMNC (IMA 2019-133) and specimen CMNMC 51710 from the Canadian Museum of Nature, Ottawa, Canada, became the holotype specimen.

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