**Sapozhnikovite, Na8(Al6Si6O24)(HS)2, a new sodalite-group mineral from the Lovozero alkaline massif, Kola Peninsula**

Nikita V. Chukanov1,2\*, Natalia V. Zubkova2, Igor V. Pekov2,3, Roman Yu. Shendrik4, Dmitry A. Varlamov5, Marina F. Vigasina2, Dmitry I. Belakovskiy6, Sergey N. Britvin7, Vasiliy O. Yapaskurt2 and Dmitry Yu. Pushcharovsky2

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Fig. 1S. Infrared (***a***) and Raman (***b***) spectra of polycrystalline ammonium hydrosulfide (NH4)(HS) drawn using data from Bragin *et al.* (1977). The band at 2565 cm–1 corresponds to stretching vibrations of the HS– anion.

Bragin J., Diem M., Guthals D., Chang S. (1977) The vibrational spectrum and lattice dynamics of polycrystalline ammonium hydrosulfide. Journal of Chemical Physics, 67, 1247–1256. https://doi.org/10.1063/1.434936

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Fig. 2S. Powder infrared absorption spectra of (*a*) haüyne (Na5.52K0.35Ca1.99)(Si6.10Al5.81Fe3+0.09O24)(SO4)1.97Cl0.11·*n*H2O (Chukanov *et al.*, 2020b), (*b*) nosean (Na5.72K0.64Ca0.33)(Si6.43Al5.51Fe3+0.06O24)(SO4)1.21Cl0.11F0.09·*n*H2O (Chukanov *et al.*, 2020a), both from the Laach Lake volcano, Eifel paleovolcanic region, Germany, and (*c*) S-free sodalite Na7.98(Si5.80Al6.20O24)Cl2.22 from the Vishnevogorskiy syenite-miaskite complex, South Urals, Russia (Nishanbaev *et al.*, 2016). The spectra are offset for comparison.

Chukanov N.V., Vigasina M.F., Zubkova N.V., Pekov I.V., Schäfer C., Kasatkin A.V., Yapaskurt V.O., Pushcharovsky D.Yu. (2020a) Extra-framework content in sodalite-group minerals: Complexity and new aspects of its study using infrared and Raman spectroscopy. *Minerals*, **10**, 363. https://doi.org/10.3390/min10040363

Nishanbaev T.P., Rassomahin M.A., Blinov I.A., Popova V.I. (2016) Minerals of sodalite-cancrinite pegmatites from the Vishnevogorsk miaskite massif, South Urals. *Mineralogy,* **3**, 40–52 (in Russian).

Fig. 3S. Calculated Raman spectrum of sodalite with the assignment of the bands, drawn using data from Hettmann *et al.* (2012).

Hettmann K., Wenzel T., Marks M., Markl G. (2012) The sulfur speciation in S-bearing minerals: New constraints by a combination of electron microprobe analysis and DFT calculations with special reference to sodalite-group minerals.*American Mineralogist,* **97**, 1653–1661.

Fig. 4S. Raman spectrum of lazurite from the Malobystrinskoe gem lazurite deposit, Baikal Lake area, Russia drawn using data from Chukanov *et al.* (2020b).

Chukanov N.V., Sapozhnikov A.N., Shendrik R.Yu., Vigasina M.F., Steudel R. (2020b) Spectroscopic and crystal-chemical features of sodalite-group minerals from gem lazurite deposits. *Minerals*, **10**, 1042. https://doi.org/10.3390/min10111042