

**Crystal Data:** Hexagonal. *Point Group:*  $3m$ . Grains, to 1 cm, are equant.

**Physical Properties:** *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle.  
Hardness = 3 D(meas.) = n.d. D(calc.) = 5.37 Easily soluble in water.

**Optical Properties:** Transparent to translucent. *Color:* Pale gray to colorless. *Streak:* White.  
*Luster:* Vitreous.

*Optical Class:* Uniaxial (-).  $n(\text{meas.}) \approx 1.9$   $n(\text{calc.}) = 1.85$

**Cell Data:** *Space Group:*  $R3c$ .  $a = 7.742(9)$   $c = 32.082(9)$   $Z = 6$

**X-ray Powder Pattern:** Mt. Lepkhe-Nelm, Lovozero alkaline massif, Kola Peninsula, Russia.  
3.58 (100), 2.591 (90), 1.704 (80), 2.048 (70), 3.10 (60), 2.216 (50), 1.893 (50)

Chemistry:	(1)	(2)
PbO	76.49	77.53
CaO	0.02	
$\text{Al}_2\text{O}_3$	5.38	5.90
$\text{SO}_3$	9.27	9.27
<u><math>\text{H}_2\text{O}</math></u>	<u>7.20</u>	<u>7.30</u>
Total	98.36	100.00

(1) Mt. Lepkhe-Nelm, Lovozero alkaline massif, Kola Peninsula, Russia; average of 5 electron microprobe analyses,  $\text{H}_2\text{O}$  by Penfield method,  $\text{SO}_4$  and OH groups confirmed by IR spectroscopy; corresponding to  $\text{Pb}_{3.04}\text{Al}_{0.94}(\text{S}_{1.03}\text{O}_{3.98})(\text{OH})_{7.08}$ . (2)  $\text{Pb}_3\text{Al}(\text{SO}_4)(\text{OH})_7$ .

**Occurrence:** A low-temperature hydrothermal alteration product of galena and natrolite by oxidizing solutions in a zoned pegmatite vein within lujavrite. Possibly a metastable ephemeral phase that forms in the early stages of oxidation of galena prior to a transformation to stable plumbojarosite–hinsdalite-like phases.

**Association:** Galena, anglesite, cerrusite, hydrocerussite, lanarkite, leadhillite.

**Distribution:** From Mt. Lepkhe-Nelm, Lovozero alkaline massif, Kola Peninsula, Russia.

**Name:** Honors Sergey Vladimirovich Krivovichev (b. 1972), Professor of mineralogy and crystallography, St. Petersburg State University, Russia, for his contributions to the mineralogy of alkaline massifs and the structural mineralogy of sulfate and lead minerals.

**Type Material:** Mineralogical Museum, St. Petersburg State University and the Geological and Mineralogical Museum, Geological Institute of the Kola Science Center, Academy of Sciences, Apatity, Russia (no. 6281/1.07.2005).

**References:** (1) Yakovenchuk, V.N., Y.A. Pakhomovsky, Y.P. Men'shikov, J.A. Mikhailova, G.Yu. Ivanyuk, and O.A. Zalkind (2007) Krivovichevite,  $\text{Pb}_3[\text{Al}(\text{OH})_6](\text{SO}_4)(\text{OH})$ , a new mineral species from the Lovozero Alkaline Massif, Kola Peninsula, Russia. *Can. Mineral.*, 45, 451-456. (2) (2007) *Amer. Mineral.*, 92, 1777-1778 (abs. ref. 1). (3) Krivovichev, S. V., T. Armbruster and V. N. Yakovenchuk (2009) The crystal structure of krivovichevite,  $\text{Pb}_3[\text{Al}(\text{OH})_6](\text{SO}_4)(\text{OH})$ . *Can. Mineral.*, 47, 153-158.