

Crystal Data: Monoclinic. *Point Group:* 2/m. As acicular [001] crystals to 5 mm and as radial aggregates. *Twining:* Along the elongation, common (lineations visible on crystals).

Physical Properties: *Cleavage:* Moderate on {100}. *Tenacity:* Ductile. *Fracture:* Conchoidal. Hardness = 5.5 VHN = 521 (25 g load). D(meas.) = n.d. D(calc.) = 4.56

Optical Properties: Opaque. *Color:* Black, grayish white in reflected light. *Streak:* Black. *Luster:* Metallic.

Optical Class: No pleochroism or birefractance.

R₁-R₂: (460) 20.1-20.8, (480) 19.6-20.3, (540) 18.7-19.3, (580) 18.2-18.9, (660) 17.5-18.1

Cell Data: *Space Group:* C2/m. *a* = 5.006(2) *b* = 14.289(6) *c* = 7.184(2) *β* = 105.17(2)° *Z* = 2

X-Ray Diffraction Pattern: Monte Leone Nappe, Binntal Region, Western Alps, Switzerland. 2.681 (100), 2.846 (80), 1.5825 (50), 3.117 (30), 2.029 (30), 2.495 (20), 2.225 (20)

Chemistry:	(1)		(2)	
	(1)	(2)	(1)	(2)
TiO ₂	40.89	42.06	BaO	4.25
Fe ₂ O ₃	33.64	23.26	As ₂ O ₃	13.51
FeO	[3.94]	[6.95]	Sb ₂ O ₃	1.43
Cr ₂ O ₃		0.52	H ₂ O	[1.30]
V ₂ O ₃		6.08	Total	99.80
PbO	5.00	0.37		100.33

(1) Monte Leone Nappe, Binntal Region, Western Alps, Switzerland; average electron microprobe analysis, FeO and H₂O calculated; corresponds to (Fe³⁺_{2.91}Fe²⁺_{0.38}Ti_{0.54}Pb_{0.15})_{Σ=3.98}Ti₃(As³⁺_{0.94}Sb³⁺_{0.07})_{Σ=1.01}O₁₃(OH). (2) Monte Arsiccio mine, Apuan Alps, Tuscany, Italy; average electron microprobe analysis supplemented by Mössbauer spectroscopy, H₂O calculated; corresponds to Fe²⁺_{0.68}(Fe³⁺_{2.03}V_{0.57}Cr_{0.05})Ti_{3.68}(As³⁺_{0.60}Sb³⁺_{0.36})(Ba_{0.19}Pb_{0.01})O_{13.27}(OH)_{0.73}.

Mineral Group: Derbylite group.

Occurrence: In hydrothermal Alpine-type fissures (Switzerland).

Association: Anatase, arsenopyrite, asbecasite, bourmonite, cafarsite, cervandonite-(Ce), chernovite, fetiasite, gold (traces), hematite, magnetite, monazite-(Ce), rutile, tennantite (Switzerland); ankerite, arsenopyrite, baryte, bianchiniite, dolomite, galena, 'hyalophane', pyrite, quartz, rutile, siderite, sphalerite, stibivanite, 'tourmaline' (Italy).

Distribution: From the Monte Leone Nappe, Binntal Region, Western Alps, Switzerland (TL). From the Monte Arsiccio mine, Apuan Alps, Tuscany, Italy.

Name: Honors Professor Stefan *Graeser* (b. 1935) of the Mineralogical-Petrographic Institute, University of Basel, Switzerland for his research on oxides and sulfosalts of arsenic in the Binntal region.

Type Material: Natural History Museum, Basel, Switzerland.

References: (1) Krzemnicki, M.S. and E. Reusser (1998) Graeserite, Fe₄Ti₃AsO₁₃(OH), a new mineral species of the derbylite group from the Monte Leone Nappe, Binntal Region, Western Alps, Switzerland. *Can. Mineral.*, 36, 1083-1104. (2) Berlepsch, P. and T. Armbruster (1998) The crystal structure of Pb²⁺-bearing graeserite, Pb_{0.14}(Fe, Ti)₇AsO_{12+x}(OH)_{2-x}, a mineral of the derbylite group. *Schweiz. Mineral. Petrogr. Mitt.*, 78, 1-9. (3) (1999) *Amer. Mineral.*, 84, 990-991 (abs. refs. 1 and 2). (4) Biagioni, C., E. Bonaccorsi, N. Perchiazzi, U. Hålenius, and F. Zaccarini (2020) Derbylite and graeserite from the Monte Arsiccio mine, Apuan Alps, Tuscany, Italy: occurrence and crystal-chemistry. *Mineral. Mag.*, 84, 766-777.