

Tables and figures

Table 1 Silicates from groups VIIID13-VIIID16 [91N1].

Silicate	Composition	Group
Jimthompsonite	$(\text{Mg,Fe})_5\text{Si}_6\text{O}_{16}(\text{OH})_2$	VIIID12
Clinojimthompsonite	$(\text{Mg,Fe})_5\text{Si}_6\text{O}_{16}(\text{OH})_2$	VIIID12
Chesterite	$(\text{Mg,Fe})_{17}\text{Si}_{20}\text{O}_{54}(\text{OH})_6$	VIIID12
Babingtonite	$\text{Ca}_2(\text{Fe,Mn})\text{FeSi}_5\text{O}_{14}(\text{OH})$	VIIID13
Manganbabingtonite	$\text{Ca}_2(\text{Mn,Fe})\text{FeSi}_5\text{O}_{14}(\text{OH})$	VIIID13
Santaclaraite	$\text{CaMn}_4\text{Si}_5\text{O}_{14}(\text{OH})_2 \cdot \text{H}_2\text{O}$	VIIID13
Bostwickite	$\text{CaMn}_6\text{Si}_3\text{O}_{16} \cdot 7\text{H}_2\text{O}$	VIIID13
Inesite	$\text{Ca}_2\text{Mn}_7\text{Si}_{10}\text{O}_{28}(\text{OH})_2 \cdot 5\text{H}_2\text{O}$	VIIID13
Marsturite	$\text{NaCaMn}_3\text{Si}_5\text{O}_{14}(\text{OH})$	VIIID13
Lithiomarsturite	$\text{LiMn}_2\text{Ca}_2\text{HSi}_5\text{O}_{15}$	VIIID13
Nambulite	$(\text{Li,Na})\text{Mn}_4\text{Si}_5\text{O}_{14}(\text{OH})$	VIIID13
Natronambulite	$(\text{Na,Li})(\text{Mn,Ca})_4\text{Si}_5\text{O}_{14}(\text{OH})$	VIIID13
Pyroxmangite	$(\text{Na,Li})\text{Mn}_4\text{Si}_5\text{O}_{14}(\text{OH})$ (see Chap. 8.1.4.1)	VIIID13
Pyroxferroite	MnSiO_3 (see Chap. 8.1.4.1)	VIIID13
Rhodonite	$(\text{Fe,Mn,Ca})\text{SiO}_3$ (see Chap. 8.1.4.1)	VIIID13
Zektzerite	$\text{NaLiZrSi}_6\text{O}_{15}$	VIIID14
Emeleusite	$\text{Na}_2\text{LiFeSi}_6\text{O}_{15}$	VIIID14
Tuhualite	$(\text{Na,K})\text{Fe}_2\text{Si}_6\text{O}_{15}$	VIIID14
Batisite	$(\text{Na,K})_2\text{BaTi}_2(\text{Si}_2\text{O}_7)_2$	VIIID15
Shcherbakovite	$\text{NaK}(\text{Ba,K})\text{Ti}_2(\text{Si}_2\text{O}_7)_2$	VIIID15
Krauskopfite	$\text{BaSi}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$	VIIID15
Stokesite	$\text{CaSnSi}_3\text{O}_9 \cdot 2\text{H}_2\text{O}$	VIIID16

Table 2. Atomic sites and thermal parameters.

a) Jimthompsonite¹⁾, having orthorhombic structure, space group Pbca [78V2].

Atom	<i>x</i>	<i>y</i>	<i>z</i>	<i>B</i> _{eq} [Å ²]	Fe/(Fe+Mg)
M1	0.12565(11)	0.27883(6)	0.89663(35)	0.43(4)	0.060(6)
M2	0.12535(10)	0.33533(6)	0.39566(32)	0.58(4)	0.156(6)
M3	0.12506(12)	0.39257(6)	0.89577(36)	0.42(4)	0.078(6)
M4	0.12485(12)	0.45165(7)	0.39642(37)	0.35(4)	0.011(6)
M5	0.12369(6)	0.50690(4)	0.89507(19)	0.55(2)	0.803(7)
Si1A	0.27111(9)	0.27787(7)	0.55967(27)	0.30(3)	
Si2A	0.26964(10)	0.39005(6)	0.56980(30)	0.40(3)	
Si3A	0.27242(9)	0.44700(6)	0.06669(29)	0.42(3)	
Si1B	0.48205(9)	0.27769(7)	0.26700(28)	0.33(3)	
Si2B	0.48078(10)	0.38929(6)	0.27278(30)	0.43(3)	
Si3B	0.47579(10)	0.44553(7)	0.77466(30)	0.47(3)	

Table 2a (cont.)

Atom	<i>x</i>	<i>y</i>	<i>z</i>	<i>B</i> _{eq} [Å ²]	Fe/(Fe+Mg)
OHA	0.18329(22)	0.33519(16)	0.06241(69)	0.49(6)	
OHB	0.56861(22)	0.33513(17)	0.76931(69)	0.50(6)	
O1A	0.30061(23)	0.24981(15)	0.31159(73)	0.65(7)	
O2A	0.18399(22)	0.27777(16)	0.56140(69)	0.40(6)	
O3A	0.29949(22)	0.33407(17)	0.55638(70)	0.68(6)	
O4A	0.18325(23)	0.39170(15)	0.56291(74)	0.50(7)	
O5A	0.29980(23)	0.41491(16)	0.82585(78)	0.73(7)	
O6A	0.30187(23)	0.42028(16)	0.33148(77)	0.69(7)	
O7A	0.18560(22)	0.44852(16)	0.06801(74)	0.55(6)	
O8A	0.31330(22)	0.49841(15)	0.08080(77)	0.61(7)	
O1B	0.45141(24)	0.24443(15)	0.03443(70)	0.54(6)	
O2B	0.56718(22)	0.27792(16)	0.26828(69)	0.41(6)	
O3B	0.45168(22)	0.33338(17)	0.23045(70)	0.65(6)	
O4B	0.56725(24)	0.39207(16)	0.27127(75)	0.60(7)	
O5B	0.44881(23)	0.42441(15)	0.05168(74)	0.59(6)	
O6B	0.45138(23)	0.40886(16)	0.54386(77)	0.76(7)	
O7B	0.56296(23)	0.44849(16)	0.77718(74)	0.63(7)	
O8B	0.43394(23)	0.49561(16)	0.71391(75)	0.62(7)	

b) Babingtonite⁵⁾, having triclinic structure, space group $P\bar{1}$ [72A1].

Atom	<i>x</i>	<i>y</i>	<i>z</i>	<i>B</i> _{eq} [Å ²]	Occupancy
Ca1	0.78195(11)	0.94185(7)	0.14246(12)	0.8282(140)	0.8561(58)
Ca2	0.23789(10)	0.52034(7)	0.30414(12)	0.6958(136)	
Fe ²⁺ (1)	0.59363(8)	0.64411(5)	0.06137(9)	0.4954(165)	
Fe ³⁺ (2)	0.04655(7)	0.23532(5)	0.18443(8)	0.5599(116)	
Si1	0.28767(14)	0.05351(9)	0.34126(15)	0.5788(166)	
Si2	0.46011(14)	0.31355(9)	0.42474(15)	0.5224(162)	
Si3	0.80613(14)	0.44506(9)	0.20977(15)	0.4960(161)	
Si4	0.98773(14)	0.71336(9)	0.30999(15)	0.5226(163)	
Si5	0.32721(14)	0.83592(9)	0.10650(16)	0.5822(165)	
O1	0.19767(39)	0.98774(26)	0.53409(44)	1.0594(437)	
O2	0.13003(36)	0.08047(24)	0.18484(41)	0.7000(390)	
O3	0.43302(38)	0.17111(25)	0.43607(42)	0.8866(414)	
O4	0.31691(36)	0.33841(24)	0.24601(41)	0.7178(394)	
O5	0.55045(37)	0.62029(24)	0.36622(41)	0.7403(394)	
O6	0.67737(36)	0.37087(24)	0.37284(41)	0.7535(398)	
O7	0.96850(37)	0.38455(24)	0.15858(41)	0.7506(399)	
O8	0.67837(36)	0.47453(24)	0.02701(41)	0.6870(391)	
O9	0.92555(35)	0.56897(23)	0.33717(40)	0.6869(389)	
O10	0.87215(37)	0.75533(24)	0.12528(41)	0.7549(399)	
O11	0.02110(38)	0.22100(25)	0.47837(42)	0.8925(414)	

Table 2b (cont.)

Atom	<i>x</i>	<i>y</i>	<i>z</i>	$B_{\text{eq}} [\text{\AA}^2]$	Occupancy
O12	0.20394(37)	0.73700(24)	0.24969(41)	0.7727(401)	
O13	0.50958(38)	0.79949(25)	0.05626(43)	0.8886(415)	
O14	0.80576(37)	0.14201(24)	0.08167(42)	0.8142(405)	
O15	0.39447(38)	0.96755(25)	0.22562(43)	0.9076(416)	

c) Zektzerite¹⁵⁾, having orthorhombic-type lattice, space group Cmca [78G1].

Atom	<i>x</i>	<i>y</i>	<i>z</i>	$B_{\text{eq}} [\text{\AA}^2]$
Na	0.25000	0.21648(8)	0.25000	2.10(3)
Li	0.24712(44)	0.00000	0.00000	1.12(8)
Zr	0.25000	−0.08805(1)	0.25000	0.38(1)
Si1	0.39091(4)	0.12869(3)	0.01792(5)	0.51(1)
Si2	0.38965(4)	0.07306(3)	0.31148(5)	0.51(1)
Si3	0.39072(4)	0.19281(3)	0.54143(5)	0.53(1)
O1	0.37070(12)	0.21970(8)	−0.00542(16)	1.21(2)
O2	0.32801(10)	0.07851(8)	−0.07887(14)	0.73(2)
O3	0.36177(11)	0.11174(9)	0.17054(15)	1.02(2)
O4	0.32978(7)	−0.00240(8)	0.34095(14)	0.79(2)
O5	0.36064(11)	0.14017(8)	0.41591(15)	0.93(2)
O6	0.32984(11)	0.17405(8)	0.66829(4)	0.87(2)
O7	0.50000	0.11001(15)	−0.00132(24)	1.33(4)
O8	0.50000	0.05683(13)	0.31751(24)	1.15(3)
O9	0.50000	0.18146(14)	0.57081(25)	1.34(4)

d) Batisite²¹⁾, having orthorhombic-type lattice, space group Imam [87S1].

Atom	Site	<i>x</i>	<i>y</i>	<i>z</i>	Occupancy
Cat1	4e	0.25000	0.24510(5)	0.0000	Ba ²⁺ −0.63; K ⁺ −0.37
Cat2	4e	0.25000	0.6837(2)	0.5000	K ⁺ −0.70; Na ⁺ −0.30
Na	4c	0.00000	0.0000	0.0000	
Oct	8h	0.25000	0.47100(6)	0.2384(1)	Ti ⁴⁺ −0.72; Nb ³⁺ −0.06; Fe ²⁺ −0.16; Zr ⁴⁺ −0.06
Si	16j	0.52520(9)	0.35528(7)	0.1966(1)	
O1	16j	0.6172(2)	0.0670(2)	0.2214(3)	
O2	16j	0.3794(2)	0.1356(2)	0.2459(4)	
O3	8f	0.5802(4)	0.2500	0.2500	
O4	8i	0.5326(6)	0.3569(6)	0.0000	
O5	4e	0.7500	0.9580(4)	0.0000	
O6	4e	0.7500	0.9718(5)	0.5000	

Table 3. Crystal structures and lattice parameters at RT.

Silicate	Space group	Lattice parameters				Refs.
		<i>a</i> [Å]	<i>b</i> [Å]	<i>c</i> [Å]	α, β, γ	
Jimthompsonite ¹⁾	Pbca	18.6263(3)	27.2303(6)	5.2970(3)		78V1
Clinojimthompsonite ²⁾	C2/c	9.874(4)	27.24(3)	5.316(3)	$\beta = 109.47(3)^\circ$	78V1
Chesterite ³⁾	A2 ₁ ma	18.6140(3)	45.306(1)	5.2966(3)		78V1
Babingtonite ⁴⁾		7.49(1)	11.83(1)	6.72(1)	$\alpha = 95.3(1)^\circ$ $\beta = 92.3(1)^\circ$ $\gamma = 103.1(1)^\circ$	81G1
Babingtonite ⁵⁾	P $\bar{1}$	7.509(19)	11.697(28)	6.719(17)	$\alpha = 91.433(41)^\circ$ $\beta = 93.866(30)^\circ$ $\gamma = 104.255(29)^\circ$	72A1
Babingtonite Fe ³⁺ Fe ²⁺ Ca ₂ Si ₅ O ₁₄ (OH) ^{a)}	P1	12.18(1)	6.68(1)	7.50(1)	$\alpha = 93^\circ 59(5)'$ $\beta = 112^\circ 19(5)'$ $\gamma = 86^\circ 3(5)'$	76K1
Manganbabingtonite ⁶⁾	triclinic	6.88	11.80	6.77	$\alpha = 90^\circ 30'$ $\beta = 93^\circ 30'$ $\gamma = 104^\circ 54'$	66V1, 67V1
Santaclaraite ⁷⁾	I $\bar{1}$	10.273(4)	11.910(4)	12.001(6)	$\alpha = 105.77(3)^\circ$ $\beta = 110.64(3)^\circ$ $\gamma = 87.13(3)^\circ$	81O1
Santaclaraite ⁸⁾	B $\bar{1}$	15.633(1)	7.603(1)	12.003(1)	$\alpha = 109.71(1)^\circ$ $\beta = 88.61(1)^\circ$ $\gamma = 99.95(1)^\circ$	84E1
Inesite ⁹⁾	P $\bar{1}$	8.928(1)	9.242(3)	11.950(4)	$\alpha = 91^\circ 53(5)'$ $\beta = 132^\circ 36(2)'$ $\gamma = 94^\circ 15(7)'$	68R1
Inesite ¹⁰⁾	P $\bar{1}$	8.889(2)	9.247(2)	11.975(3)	$\alpha = 88.15(2)^\circ$ $\beta = 132.07(2)^\circ$ $\gamma = 96.64(2)^\circ$	78W1
Marsturite ¹¹⁾	P1 or P $\bar{1}$	7.70(1)	12.03(3)	6.78(1)	$\alpha = 85.26(35)^\circ$ $\beta = 94.10(26)^\circ$ $\gamma = 111.04(2)^\circ$	78P1
Lithiomarsturite ¹²⁾	P $\bar{1}$	7.652(3)	12.119(3)	6.805(2)	$\alpha = 85.41(2)^\circ$ $\beta = 94^\circ 42(3)^\circ$ $\gamma = 111.51(2)^\circ$	90P1
Nambulite ¹³⁾	P $\bar{1}$	7.621(5)	11.761(8)	6.731(5)	$\alpha = 92^\circ 46(3)'$ $\beta = 95^\circ 05(3)'$ $\gamma = 106^\circ 52(5)'$	75N1
Natronambulite ¹⁴⁾	P1 or P $\bar{1}$	7.620	11.762	6.737	$\alpha = 92.81^\circ$ $\beta = 94.59^\circ$ $\gamma = 106.87^\circ$	85M1, 87H1
Zektzerite ¹⁵⁾	Cmca or C2ca	14.306(5)	17.330(4)	10.140(3)		77D1
Zektzerite ¹⁶⁾	Cmca	14.330(2)	17.354(2)	10.164(2)		78G1
Emeleusite ¹⁸⁾	Acam	10.072(3)	17.337(6)	14.004(3)		78J1
Tuhualite ¹⁹⁾	Cmca or C2ca	14.31	17.28	10.11		56H1

Table 3 (cont.).

Silicate	Space group	Lattice parameters				Refs.
		<i>a</i> [Å]	<i>b</i> [Å]	<i>c</i> [Å]	α, β, γ	
Na ₂ Mg ₂ Si ₆ O ₁₅	Cmca	14.165	17.59	10.205		72C1
Batisite ²⁰⁾	Orth.	10.41(5)	13.85(5)	8.06(2)		60K1
Batisite ²¹⁾	Imam	10.499(2)	13.913(4)	8.087(2)		87S1
Krauskopfite ²²⁾	P2 ₁ /a	8.460(5)	10.622(66)	7.837(4)	$\beta=94^\circ 32(8)'$	65A1

- 1) (Mg_{7.73}Fe_{2.11}Mn_{0.13}Ca_{0.08}Na_{0.05})(Si_{11.91}Al_{0.37})O₃₂(OH)₄;
 2) (Mg_{7.59}Fe_{2.07}Mn_{0.13}Ca_{0.11}Al_{0.05}Na_{0.04})(Si_{11.97}Al_{0.03})O₃₂(OH)₄;
 3) (Mg_{12.43}Fe_{4.07}Mn_{0.29}Ca_{0.16}Na_{0.02})(Si_{19.94}Al_{0.05})O₅₄(OH)₆;
 4) Na_{0.04}Ca_{2.00}Fe_{0.76}Mn_{0.15}Mg_{0.12}Fe³⁺_{0.99}Al_{0.04}Si_{4.96}O₁₄(OH)_{0.98};
 5) (Ca_{3.85}Mn_{0.11}Na_{0.03}K_{0.03})(Fe_{1.26}Mn_{0.49}Mg_{0.26})(Fe³⁺_{1.97}Al_{0.01})(Si_{9.83}Al_{0.17})O_{27.73}(OH)_{2.27};
 6) Composition [%]: SiO₂ – 51.85; TiO₂ – 0.15; Al₂O₃ – 0.56; Fe₂O₃ – 12.26; FeO – 4.52; MgO – 0.60; MnO – 7.91; CaO – 19.00; Na₂O – 0.25; K₂O – 0.09; H₂O⁺ – 1.95; H₂O[–] – 0.26; F – 0.1, Cl – 0.06; CO₂ – 0.13;
 7) (Ca_{0.90}Mn_{4.04}Mg_{0.05}Fe²⁺_{0.01})[Si₅O₁₄(OH)](OH) · H₂O;
 8) (Ca_{0.87}Na_{0.03})(Mn²⁺_{3.94}Mg_{0.05}Fe²⁺_{0.01}Ni_{0.01}Co_{0.01})(Si_{5.04}Al_{0.02})O_{14.03}(OH)_{0.97}](OH) · H₂O;
 9) (Mn_{6.16}Fe_{0.56}Mg_{0.08}Na_{0.12}Ca_{0.08})(Ca_{1.97}K_{0.06})(OH)₂(H₂O)_{5.36}(Si_{9.96}Al_{0.06})O_{27.95};
 10) Ca₂Mn₇Si₁₀O₂₈(OH)₂ · 5H₂O;
 11) Ca_{2.70}Mn_{5.86}Na_{1.60}Fe_{0.04}Mg_{0.04}Si_{9.91}H₂O₃₀;
 12) Ca_{1.98}Li_{1.01}Mn_{1.35}Fe_{0.56}Mg_{0.10}H_{1.00}Si_{5.00}O₁₅;
 13) (Li_{0.54}Na_{0.43}K_{0.01})(Mn_{3.60}Mg_{0.20}Ca_{0.09}Al_{0.05}Fe³⁺_{0.03})Si_{4.98}O_{13.90}(OH)_{1.10};
 14) (Li_{0.17}Na_{0.69})(Mn_{3.32}Ca_{0.39}Mg_{0.19}Fe_{0.03})Si_{5.07}O_{14.02}(OH)_{0.98};
 15) Li_{1.00}Na_{1.02}(Zr_{0.94}Ti_{0.05}Hf_{0.01})Si_{6.06}O_{15.15};
 16) LiNaZrSi₆O₁₅;
 17) Footnote was deleted.
 18) Na₂LiFe³⁺Si₆O₁₅;
 19) Composition [wt%]: SiO₂ – 62.93; Al₂O₃ – 0.63; Fe₂O₃ – 14.09; FeO – 9.58; MgO – 0.42; MnO – 0.81; Na₂O – 7.11; K₂O – 1.74; H₂O[–] – 0.38; H₂O⁺ – 1.61; TiO₂ – 0.42;
 20) Na₂BaTi₂(Si₂O₇)₂;
 21) (Ba_{0.6}K_{0.4})(K_{0.7}Na_{0.3})Na(Ti_{0.72}Fe_{0.16}Nb_{0.06}Zr_{0.06})Si₄O₁₄;
 22) (Ba_{1.03}K_{0.01}Ca_{0.01})Si_{1.95}O_{4.95} · 3.08H₂O;
 23) (Ca_{0.76}Mn_{0.19})(Mn³⁺_{5.97}Fe³⁺_{0.05})(Si_{2.80}Al_{0.16}As⁵⁺_{0.07})O₁₆ · 7.01H₂O;
 24) (Na_{0.84}K_{1.16})(Ba_{0.55}K_{0.20}Ca_{0.18})(Ti_{1.55}Fe_{0.18}Zr_{0.04}Al_{0.01}Si_{0.21})Si_{4.0}(O_{13.39}OH_{0.61});
 25) Natural sample;
 a) With traces of Mg, Mn, Al in the octahedral sites and Al in the tetrahedral one.

Table 4. Magnetic properties of babingtonite [91B1].

MnO [wt %]	0.82 ⁵⁾	0.72 ⁶⁾	3.83 ⁷⁾	5.89 ⁸⁾	4.12 ⁹⁾
<i>T_m</i> [K]	18.9	18.5	16.5	14.9	14.5

5)-9) Compositions according to Table 5.

Table 5. Data obtained by the ^{57}Fe NGR method.

Silicate	T [K]	$T_m^{1)}$ [K]	Sites	$\delta^{2)}$ [mm/s]	ΔQ [mm/s]	DH [mm/s]	B_{hf} [T]	A [%]	Refs.
Babingtonite ³⁾	30		Fe^{2+}	1.32(1)	2.89(1)	0.26(1)		44.3(2.0)	80A1
			Fe^{3+}	0.51(1)	0.86(1)	0.29(1)		55.7(2.0)	
	80		Fe^{2+}	1.31(1)	2.91(1)	0.26(1)		44.1(2.0)	
			Fe^{3+}	0.51(1)	0.86(1)	0.29(1)		55.8(2.0)	
	295		Fe^{2+}	1.18(1)	2.42(1)	0.29(1)		44.3(2.0)	
			Fe^{3+}	0.38(1)	0.88(1)	0.28(1)		55.7(2.0)	
	575		Fe^{2+}	0.96(1)	1.65(1)	0.29(1)		42.9(2.0)	
			Fe^{3+}	0.18(1)	0.84(1)	0.28(1)		57.1(2.0)	
Babingtonite ⁴⁾	295		Fe^{2+}	1.19(1)	2.43(1)	0.28(1)		40.4(2.0)	80A1
			Fe^{3+}	0.40(1)	0.87(1)	0.29(1)		59.6(2.0)	
Babingtonite ⁵⁾	4.2	18.9	Fe^{3+}	0.52	0.38		54.78	55.7	91B1
			Fe^{2+}	1.31	0.42		23.27	44.3	
	295		Fe^{3+}	0.40	0.84	0.31		53	
			Fe^{2+}	1.20	2.44	0.34		48	
Babingtonite ⁶⁾	4.2	18.5	Fe^{3+}	0.53	0.41		54.91	55.9	91B1
			Fe^{2+}	1.31	0.38		23.35	44.1	
	20		Fe^{3+}	0.52	0.87			55.5	
			Fe^{2+}	1.32	2.91			44.5	
	295		Fe^{3+}	0.40	0.84	0.30		57	
			Fe^{2+}	1.20	2.44	0.32		43	
Babingtonite ⁷⁾	4.2	16.5	Fe^{3+}	0.53	0.43		54.15	61.6	91B1
			Fe^{2+}	1.30	0.44		23.07	38.4	
	295		Fe^{3+}	0.41	0.86	0.30		60	
			Fe^{2+}	1.20	2.44	0.29		40	
Babingtonite ⁸⁾	4.2	14.9	Fe^{3+}	0.52	0.53		53.72	66.2	91B1
			Fe^{2+}	1.30	0.43		23.01	33.8	
	295		Fe^{3+}	0.40	0.82	0.38		66	
			Fe^{2+}	1.20	2.43	0.29		34	
Babingtonite ⁹⁾	4.2	14.5	Fe^{3+}	0.52	0.43		54.03	68	91B1
			Fe^{2+}	1.31	0.44		23.20	32	
	20		Fe^{3+}	0.52	0.88			62.1	
			Fe^{2+}	1.33	2.91			37.9	
	295		Fe^{3+}	0.40	0.85	0.33		62	
			Fe^{2+}	1.18	2.41	0.31		38	

1) The ordering temperature;

2) Isomer shift, relative to $\alpha\text{-Fe}$;3) $\text{Ca}_{1.99}(\text{Fe}^{2+}_{0.65}\text{Mg}_{0.11}\text{Mn}^{2+}_{0.22})(\text{Fe}^{3+}_{0.95}\text{Al}_{0.07})\text{Si}_{5.01}\text{O}_{14}\text{OH}$;4) $\text{Ca}_{2.01}(\text{Fe}^{2+}_{0.74}\text{Mg}_{0.13}\text{Mn}^{2+}_{0.10})(\text{Fe}^{3+}_{0.93}\text{Al}_{0.06})\text{Si}_{5.02}\text{O}_{14}\text{OH}$;5) $\text{Ca}_{2.02}(\text{Mg}_{0.29}\text{Mn}_{0.07}\text{Fe}^{2+}_{0.83})(\text{Fe}^{3+}_{0.98}\text{Al}_{0.06})\text{Si}_{5.00}\text{O}_{14}\text{OH}$;6) $\text{Ca}_{2.00}(\text{Mg}_{0.19}\text{Mn}_{0.06}\text{Fe}^{2+}_{0.78})(\text{Fe}^{3+}_{0.92}\text{Al}_{0.05})\text{Si}_{5.00}\text{O}_{14}\text{OH}$;7) $\text{Ca}_{1.99}(\text{Na}_{0.01}\text{Mg}_{0.06}\text{Mn}_{0.31}\text{Fe}^{2+}_{0.67})(\text{Fe}^{3+}_{1.00}\text{Al}_{0.02})\text{Si}_{5.00}\text{O}_{14}\text{OH}$;8) $\text{Ca}_{1.99}(\text{Mg}_{0.20}\text{Mn}_{0.44}\text{Fe}^{2+}_{0.48})(\text{Fe}^{3+}_{0.94}\text{Al}_{0.03})\text{Si}_{5.00}\text{O}_{14}\text{OH}$;9) $\text{Ca}_{1.99}(\text{Mg}_{0.21}\text{Mn}_{0.33}\text{Fe}^{2+}_{0.54})(\text{Fe}^{3+}_{0.97}\text{Al}_{0.02})\text{Si}_{5.00}\text{O}_{14}\text{OH}$.

Table 6. ^7Li and ^{23}Na quadrupole coupling constants, asymmetry parameters and coordination polyhedra in zektzerite.

Silicate	Nucleus	e^2qQ/h [MHz]	η	Coordination	Refs.
Zektzerite,	^7Li	0.119(5)	0.05(1)	Tetr.	89G1
$\text{NaLiZrSi}_6\text{O}_{15}$	^{23}Na	2.42	0.86	10-coord. irregular	
Krauskopfite,	^{29}Si	−80.3			00O1
$\text{BaSi}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$		−84.1			

Table 7. Refractive indices.

Silicate ^{a)}	n_α	n_β	n_γ	$2V^\circ$		Refs.
Jimthompsonite ¹⁾	1.6050(5)	1.6260(5)	1.6330(5)	62(2) ^o	biaxial, negative	78V1
Chesterite ³⁾	1.6170(5)	1.6320(5)	1.6400(5)	71(2) ^o	biaxial, negative	78V1
Babingtonite ⁴⁾	1.716(2)	1.731(2)	1.750(2)	69(3) ^o		81G1
Mangan- babingtonite ⁶⁾	1.716	1.730	1.746	78 ^o ...82 ^o		66V1, 67V1
Santaclaraite ⁸⁾	1.681(2)	1.696(2)	1.708(2)	83(1) ^o	biaxial, negative	84E1
Inesite ⁹⁾	1.6180(3)	1.6387(3)	1.6522(3)	74 ^o 54'...76 ^o 54'	biaxial, negative	68R1
Marsturite ¹¹⁾	1.686(2)	1.691(1)	1.780(1)	60 ^o	biaxial, positive	78P1
Lithiomarsturite ¹²⁾	1.645(1)	1.660(1)	1.666(1)	59.9(8) ^o	biaxial, negative	90P1
Natronambulite ¹⁴⁾	1.706(2)	1.710(2)	1.730(5)	$\cong 45^\circ$	biaxial, positive	85M1
Bostwickite ²³⁾	1.775(5)	1.798(3)	1.800(3)	25 ^o	biaxial, negative	83D1
Zektzerite ¹⁵⁾	1.582(3)	1.584(3)	1.584(3)	$\cong 0^\circ$	biaxial, negative	77D1
Tuhualite ¹⁹⁾	1.680(3)	1.612(3)	1.621(3)	variable (61 ^o ...70 ^o)	biaxial, positive	56H1
Batisite ²⁰⁾	1.730(1)	1.735(1)	1.791(1)	7 ^o	biaxial, positive	60K1
Potassic batisite ²⁴⁾	1.714		1.769	64 ^o	biaxial, positive	65P1
Krauskopfite ²²⁾	1.574(2)	1.587(2)	1.599(2)	88(5) ^o	biaxial, negative	65A1, 65A2
Shcherbakovite ²⁵⁾	1.776	1.745	1.707	82 ^o	biaxial, negative	54E1

a) Compositions are given in Table 3;

b) Natural sample.