Seidite-(Ce) $Na_4(Ce, Sr)_2TiSi_8O_{18}(O, OH, F)_6 \cdot 5H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As spherulites, to 1 cm, with fibers elongated on [010] and flattened on {100}.

Physical Properties: *Cleavage*: Perfect {100}; less perfect {001}. *Fracture*: Fibrous or splintery. Hardness = 3-4 D(meas.) = 2.76 D(calc.) = 2.73
Readily soluble in 10% HCl or HNO_3, reacts with H_2O.

Optical Properties: Translucent. *Color*: Bright yellow, pinkish yellow, or cream. *Streak*: n.d. *Luster*: Vitreous to silky, resinous or dull in some specimens.
Optical Class: Biaxial (-). $\alpha = 1.542(2)$ $\beta = 1.569(2)$ $\gamma = 1.571(2)$ 2V(meas.) = 28(1)° 2V(calc.) = 31° Positive elongation. *Orientation*: $X \approx a$, $Y \approx c$, $Z \approx b$.

Cell Data: *Space Group*: *C*2/*c*. $a = 24.61(5)$ $b = 7.23(1)$ $c = 14.53(3)$ $\beta = 94.6(3)°$ $Z = 4$

X-ray Powder Pattern: Yubileynaya pegmatite vein, Lovozero massif, Kola Peninsula, Russia. 12.32 (100), 6.93 (30B), 3.11 (24), 7.22 (20B), 6.20 (20B), 3.23 (20B), 3.08 (16)

Chemistry:

	(1)		(1)
Na_2O	9.38	Nd_2O_3	1.60
K_2O	1.20	Sm_2O_3	0.16
CaO	1.04	ThO_2	2.96
SrO	5.20	SiO_2	45.62
BaO	1.56	TiO_2	6.54
MnO	0.34	Nb_2O_5	0.78
FeO	0.10	F	1.52
La_2O_3	4.62	H_2O	10.80
Ce_2O_3	6.52	- O = F	0.64
Pr_2O_3	0.54	sum	99.84

(1) Yubileynaya pegmatite vein, Lovozero alkaline massif, Kola Peninsula, Russia; electron microprobe analysis supplemented by IR spectroscopy, H_2O and F by wet methods; corresponds to $[Na_{3.19}Ca_{0.19}(H_3O)_{0.62}]_{\Sigma=4.00}[Sr_{0.53}K_{0.27}Ba_{0.11}(H_3O)_{0.09}]_{\Sigma=1.00}(Ce_{0.42}La_{0.30}Nd_{0.10}Pr_{0.04}Sm_{0.02}Th_{0.012})_{\Sigma=0.99}(Ti_{0.86}Nb_{0.06}Mn_{0.05}Fe_{0.02})_{\Sigma=0.99}Si_8O_{21.90}[F_{0.84}(OH)_{0.16}] \cdot 5.26H_2O$.

Occurrence: Sparingly in cavernous natrolite in an ultra-agpaitic pegmatite vein.

Association: Belovite, vitusite, sazhinite-(Ce), steenstrupine, manganneptunite, serandite, leucosphenite, sphalerite.

Distribution: Yubileynaya pegmatite vein, Mount Karnasurt, Lovozero alkaline massif, Kola Peninsula, Russia.

Name: For the locality, the *Seidozer* massif .

Type Material: Museum of the Saint Petersburg Mining Institute, Russia.

References: (1) Khomyakov, A.P., G. Ferraris, E. Belluso, S.N. Britvin, G.N. Nechelyustov, and S.V. Soboleva (1998) Seidite-(Ce), $Na_4SrCeTiSi_8O_{22}F \cdot 5H_2O$ - a new mineral with zeolite properties. Zapiski Vseross. Mineral. Obshch., 127(4), 94-100 (in Russian, English abs.). (2) (2000) Amer. Mineral., 85, 627 (abs. ref. 1). (3) Ferraris, G., E. Belluso, A. Gula, S.V. Soboleva, and A.P. Khomyakov (2003) The crystal structure of seidite-(Ce), $Na_4(Ce,Sr)_2\{Ti(OH)_2Si_8O_{18}\}(O,OH,F)_4 \cdot 5H_2O$, a modular microporous titanosilicate of the rhodesite group. Can. Mineral., 41, 1183-1192.