Stracherite $BaCa_6(SiO_4)_2[(PO_4)(CO_3)]F$

Crystal Data: Hexagonal. *Point Group*: $\bar{3}\ 2/m$. As crystals flattened on {0001} with hexagonal cross sections to ~0.6 mm.

Physical Properties: *Cleavage*: Imperfect on (001). *Fracture*: Irregular. *Tenacity*: Brittle. Hardness = ~5 VHN = 490-540, 510 average (50 g load). D(meas.) = n.d. D(calc.) = 3.365

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Uniaxial (+). ω = 1.635(2) ε = 1.659(2)

Cell Data: Space Group: $R\bar{3}\ m$. a = 7.0877(5) c = 25.201(2) Z = 3

X-ray Powder Pattern: n.d.

Chemistry:

	(1)
SO_3	1.94
P_2O_5	11.24
V_2O_5	0.18
SiO_2	15.11
TiO_2	0.09
Al_2O_3	0.09
CaO	45.49
BaO	19.85
Na_2O	0.05
K_2O	0.11
F	2.44
CO_2	[4.44]
H_2O	[0.23]
–O = F	1.03
	100.00

(1) Hatrurim Complex, Negev Desert, near Arad, Israel; average of 22 electron microprobe analyses supplemented by Raman spectroscopy, CO_2 and H_2O calculated on charge balance; corresponds to $(Ba_{0.96}K_{0.02}Na_{0.01})_{\Sigma=0.99}Ca_{6.01}[(SiO_4)_{1.86}(PO_4)_{0.12}(AlO_4)_{0.01}(TiO_4)_{0.01}]_{\Sigma=2.00}[(PO_4)_{1.05}(CO_3)_{0.75}(SO_4)_{0.18}(VO_4)_{0.02}]_{\Sigma=2.00}(F_{0.95}O_{0.03})_{\Sigma=0.98}$.

Mineral Group: Zadovite group.

Occurrence: In pyrometamorphic spurrite marbles and formed under the influence of by-products (gases, fluids) of combustion metamorphism.

Association: Spurrite, calcite, brownmillerite, shulamitite, CO_3-bearing fluorapatite, fluormayenite-fluorkyuygenite, ariegilatite, periclase, brucite, barytocalcite, barite, elbrusite-kerimasite garnets.

Distribution: From the Hatrurim Complex, Negev Desert, near Arad, Israel.

Name: Honors American geologist, Glenn Blair Stracher (aka "The Firewalker") (b. 1949), Professor Emeritus of Geology, East Georgia State College, Swainsboro, Georgia, USA. Stracher is the author and editor of many scientific works on coal combustion and chemical thermodynamics.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4957/1).

References: (1) Galuskin, E.V., B. Krüger, Irina O. Galuskina, H. Krüger, Y. Vapnik, A. Pauluhn, and V. Olieric (2018) Stracherite, $BaCa_6(SiO_4)_2[(PO_4)(CO_3)]F$, the first CO_3-bearing intercalated hexagonal antiperovskite from Negev Desert, Israel. Amer. Mineral., 103(10), 1699-1706.