Wilancookite $(Ba,K,Na)_8(Ba,Li,\square)_6Be_{24}P_{24}O_{96}\cdot 32H_2O$

Crystal Data: Isometric. *Point group*: 23. As dodecahedral {110} crystals to 100 μm.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Irregular.
Hardness = 4-5 (by analogy to pahasapaite). D(meas.) = n.d. D(calc.) = 3.05

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous.
Optical Class: Isotropic. *n* = 1.560(2) *Pleochroism*: None.

Cell Data: *Space Group: I*23. *a* = 3.5398(2) Z = 2

X-ray Powder Pattern: Lavra Ponte do Piauí pegmatite, Itinga, Minas Gerais, Brazil.
3.043 (100), 5.54 (80), 2.774 (80), 3.212 (70), 2.885 (70), 6.90 (60), 3.630 (60)

Chemistry:

	(1)	(2)
P_2O_5	36.19	37.06
SiO_2	0.04	
Al_2O_3	0.41	
BaO	34.65	36.69
Na_2O	0.09	
K_2O	0.32	
BeO	12.86	13.06
Li_2O	0.50	0.65
H_2O	[12.31]	12.54
Total	97.37	100.00

(1) Lavra Ponte do Piauí pegmatite, Itinga, Minas Gerais, Brazil; average electron microprobe analysis supplemented by Raman spectroscopy, H_2O calculated from structure, BeO and Li_2O by secondary-ion mass spectrometry; corresponds to $(Ba_{7.54}K_{0.32}Na_{0.14})_{\Sigma=8.00}(Ba_{3.04}Li_{1.57}\square_{1.39})_{\Sigma=6.00}$ $Be_{24.08}(P_{23.88}Al_{0.38}\,Si_{0.03})_{\Sigma=24.29}O_{96}\cdot 32H_2O$. (2) $(Ba)_8(Ba_3Li_2\square)Be_{24}P_{24}O_{96}\cdot 32H_2O$.

Occurrence: A secondary mineral in phosphate nodules near the quartz core of a complex granitic pegmatite, formed during late stages by reaction between montebrasite and beryl.

Association: Fluorapatite, childrenite, eosphorite, zanazziite, greifenstenite, guimarãesite, ushkovite, saléeite, moraesite, albite, montebrasite, Li-bearing micas, cassiterite, elbaite, quartz.

Distribution: From the Lavra Ponte do Piauí pegmatite, Itinga, Jequitinhonha, Minas Gerais, Brazil.

Name: Honors American mineralogist and crystallographer William R. Cook Jr. (1927-2006) and his wife Anne. Bill and Anne endowed the mineralogy chair at the Cleveland Museum of Natural History (Ohio, USA) and were founding members of the Mineralogical Society of Cleveland.

Type Material: Laboratory of Mineralogy, University of Liège, Belgium (20394), and the Natural History Museum of Luxembourg, Luxembourg City, Luxembourg (2011-33).

References: (1) Hatert, F., S. Philippo, L. Ottolini, F. Dal Bo, R. Scholz, M.L.S.C. Chaves, H. Yang, R.T. Downs, and L.A.D. Menezes Filho (2017) Wilancookite, $(Ba,K,Na)_8(Ba,Li,\square)_6Be_{24}$ $P_{24}O_{96}\cdot 32H_2O$, a new beryllophosphate with a zeolite framework. Eur. J. Mineral., 29(5), 923-930. (2) (2018) Amer. Mineral., 103, 2045 (abs. ref. 1).