

Crystal Data: Monoclinic. *Point Group:* $2/m$. As aggregates of thin flakes and tapered platy crystals to 80 μm and as rounded, ellipsoidal aggregates to 0.5 mm. Crystals display $\{100\}$, $\{011\}$ and $\{0\bar{5}1\}$.

Physical Properties: *Cleavage:* Perfect on (100). *Fracture:* Deforms plastically.
Tenacity: Flexible. *Hardness:* = 1 *D(meas.):* = n.d. *D(calc.):* = 3.197

Optical Properties: Transparent. *Color:* Sky blue to pale blue. *Streak:* White.
Luster: Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.601(2)$ $\beta = 1.660(2)$ $\gamma = 1.662(2)$ $2V(\text{meas.}) = 18(2)^\circ$
 $2V(\text{calc.}) = 20^\circ$ *Orientation:* $X \wedge a = 12.0^\circ$ (in β obtuse), $Y \parallel b$, $Z \wedge c = 4.7^\circ$ (in β obtuse).

Dispersion: Weak, $r < v$.

Cell Data: *Space Group:* $P2_1/c$. $a = 11.793(2)$ $b = 9.1138(14)$ $c = 10.3038(7)$ $\beta = 103.859(9)^\circ$
 $Z = 4$

X-ray Powder Pattern: Tsumeb mine, Otjikoto (Oshikoto) region, Namibia.
11.29 (100), 2.922 (17), 3.143 (15), 3.744 (11), 2.655 (9), 1.598 (8), 2.252 (7)

Chemistry:	(1)
As ₂ O ₅	36.27
As ₂ O ₃	[1.26]
Al ₂ O ₃	0.37
ZnO	49.72
MnO	0.32
FeO	0.71
K ₂ O	0.25
<u>H₂O</u>	<u>[19.89]</u>
Total	108.79

(1) Tsumeb mine, Otjikoto (Oshikoto) region, Namibia; average of 10 electron microprobe analyses, H₂O & As₂O₃ by structure analysis, H₂O, OH, As⁵⁺ & As³⁺ confirmed by spectroscopy; corresponds to $\text{K}_{0.02}(\text{Zn}_{1.93}\text{Fe}_{0.03}\text{Al}_{0.02}\text{Mn}_{0.01})_{\Sigma=1.99}(\text{OH})_{0.96}(\text{H}_2\text{O})(\text{As}^{5+}\text{O}_4)[\text{As}^{3+}(\text{OH})_2\text{O}]_{0.04}(\text{H}_2\text{O})_{1.96}$.

Occurrence: A secondary mineral in the oxidized zone of a polymetallic sulfide deposit.

Association: Leiteite, köttigite, legrandite, adamite.

Distribution: From the "Zinc pocket" on the 44 level, Tsumeb mine, Otjikoto (Oshikoto) region, Namibia.

Name: Honors Ian Bruce (b. 1969) for significant contributions to the mineral collections of museums worldwide and for his role in reopening the Tsumeb mine for mineral collecting.

Type Material: Department of Natural History, Royal Ontario Museum, Toronto, Canada (M531150), and the Mineralogical Museum, University of Hamburg, Germany (TS 119B).

References: (1) Cooper, M.A., Y.A. Abdu, N.A. Ball, F.C. Hawthorne, M.E. Back, K.T. Tait, J. Schlüter, T. Malcherek, D. Pohl, and G. Gebhard (2012) Ianbruceite, ideally $[\text{Zn}_2(\text{OH})(\text{H}_2\text{O})(\text{AsO}_4)](\text{H}_2\text{O})_2$, a new arsenate mineral from the Tsumeb mine, Otjikoto (Oshikoto) region, Namibia: description and crystal structure. *Mineral. Mag.*, 76(5), 1119-1131. (2) (2015) *Amer. Mineral.*, 100, 2008-2009 (abs. ref. 1).