Zýkaite $Fe_4^{3+}(AsO_4)_3(SO_4)(OH)\cdot 15H_2O$

Crystal Data: Orthorhombic. *Point Group:* n.d. Fine acicular crystals, to 0.02 mm, covering and composing nodules, to 3 cm, and as a massive cavity filling.

Physical Properties: *Fracture:* Uneven. *Tenacity:* Greasy. Hardness = Very soft. D(meas.) = 2.50 D(calc.) = 2.504

Optical Properties: Semitransparent. *Color:* Grayish white with pale yellowish green or brownish tint; colorless in transmitted light. *Streak:* Pale yellowish. *Luster:* Dull. *Optical Class:* Biaxial (–). *Orientation:* Positive elongation, parallel extinction. $\alpha = 1.632$ β = n.d. $\gamma = 1.646$ 2V(meas.) = Large.

Cell Data: *Space Group:* n.d. $a = 20.853(20)$ $b = 7.033(4)$ $c = 36.991(23)$ Z = 8

X-ray Powder Pattern: Kaňk, Czech Republic.
10.4 (10), 10.6 (7), 6.92 (4), 5.610 (4), 3.812 (4), 2.831 (4), 3.516 (3)

Chemistry:

	(1)	(2)
SO_3	8.36	7.82
P_2O_5	0.12	
As_2O_5	33.67	33.69
Fe_2O_3	30.58	31.21
CaO	0.02	
H_2O	26.50	27.28
insol.	0.49	
Total	99.74	100.00

(1) Kaňk, Czech Republic; average of two analyses, H_2O by TGA; after deduction of gypsum, corresponds to $Fe_{3.96}[(AsO_4)_{3.03}(PO_4)_{0.02}]_{\Sigma=3.05}(SO_4)_{1.08}(OH)\cdot 14.91H_2O$.
(2) $Fe_4(AsO_4)_3(SO_4)(OH)\cdot 15H_2O$.

Occurrence: An alteration product of arsenopyrite and pyrite in ancient mine dumps.

Association: Kaňkite, scorodite, pitticite, "limonite", arsenopyrite, gypsum, quartz.

Distribution: From the Šafary mine dump, near Kaňk, Kutná Hora district, Czech Republic.

Name: To honor Dr. Václav Zýka (1926–), Director, Institute of Raw Materials, Kutná Hora, Czech Republic.

Type Material: Charles University, Prague, Czech Republic, 20558; National School of Mines, Paris, France; National Museum of Natural History, Washington, D.C., USA, 144940, 144941.

References: (1) Čech, F., J. Jansa, and F. Novák (1978) Zýkaite, $Fe_4^{3+}(AsO_4)_3(SO_4)(OH)\cdot 15H_2O$, a new mineral. Neues Jahrb. Mineral., Monatsh., 134–144. (2) (1978) Amer. Mineral., 63, 1284 (abs. ref. 1).