

**Vajdakite**

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As acicular to lath-shaped crystals to 0.5 mm; in divergent sprays and crusts.

**Physical Properties:** *Cleavage:* {100} perfect, {010} good. *Fracture:* Even. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = 3.50 D(calc.) = 3.44

**Optical Properties:** Translucent. *Color:* Gray-green to grass-green; some aggregates are yellow-green. *Streak:* White to light gray-green. *Luster:* Vitreous.

*Optical Class:* Biaxial (+).  $\alpha = 1.757(2)$   $\beta = 1.778(2)$   $\gamma = 2.04(1)$   $2V(\text{calc.}) = 35.1^\circ$

*Pleochroism:*  $X \approx Y =$  light gray to light greenish gray,  $Z =$  yellowish gray. *Orientation:*  $X = b$ ,  $Y \wedge a = 1^\circ$  in acute  $\beta$ ,  $Z \wedge c = 12^\circ$  in obtuse  $\beta$ . Positive elongation.

**Cell Data:** *Space Group:*  $P2_1/c$ .  $a = 7.0515(6)$   $b = 12.0908(9)$   $c = 12.2190(14)$   $\beta = 101.268(9)^\circ$   
 $Z = 4$

**X-ray Powder Pattern:** Svornost mine, northwestern Bohemia, Czech Republic.  
6.046 (100), 3.324 (59), 6.915 (26), 2.2642 (19), 3.457 (16), 2.624 (15), 2.593 (12)

Chemistry:	(1)	(2)
As <sub>2</sub> O <sub>5</sub>	36.59	36.65
MoO <sub>3</sub>	53.09	53.34
H <sub>2</sub> O	11.34	10.01
Total	100.03	100.00

(1) Svornost mine, northwestern Bohemia, Czech Republic; average of 3 electron microprobe analyses, H<sub>2</sub>O by TGA and IR spectroscopy; corresponds to  $(\text{Mo}^{6+}\text{O}_2)_{1.93}(\text{As}^{3+}_2\text{O}_5)_{0.97} \cdot 3.30\text{H}_2\text{O}$ .

(2)  $(\text{Mo}^{6+}\text{O}_2)_2\text{As}^{3+}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$ .

**Occurrence:** A rare secondary mineral in a highly oxidized uraninite-arsenide-sulfarsenide deposit (Czech Republic).

**Association:** Arsenolite, scorodite, parascorodite, kaňkite, annabergite, köttigite, pyrite, marcasite, nickelskutterudite, löllingite.

**Distribution:** From the Geschieber vein on the 12th level, Svornost mine, Jáchymov (St. Joachimsthal), ~20 km north of Karlovy Vary, northwestern Bohemia, Czech Republic.

**Name:** Honors Josef *Vadjak* (b. 1930), of Pequa Rare Minerals, Massapequa, New York, USA, who drew attention to the species, and in recognition of his contributions to mineralogical research on the Jáchymov ore district.

**Type Material:** Mineralogical collection, National Museum, Prague, Czech Republic (P1p 19/98).

**References:** (1) Ondruš, P., R. Skála, I. Císařová, F. Veselovský, J. Frýda, and J. Čejka (2002) Description and crystal structure of vajdakite,  $[(\text{Mo}^{6+}\text{O}_2)_2(\text{H}_2\text{O})_2\text{As}^{3+}_2\text{O}_5] \cdot \text{H}_2\text{O}$  - A new mineral from Jáchymov, Czech Republic. *Amer. Mineral.*, 87, 983-990.