Čechite $Pb(Fe^{2+},Mn)(VO_4)(OH)$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals are rough and rounded, to 3 mm, elongated along [001], showing {110} and {010}; as aggregates of anhedral crystals in granular masses.

Physical Properties: *Fracture:* Uneven to conchoidal. *Tenacity:* Brittle. Hardness = 4.5–5 VHN = 274–367, 316 average (100 g load). D(meas.) = 5.88 D(calc.) = 5.94 Magnetic.

Optical Properties: Opaque. *Color:* Black; gray-white with a yellowish tint in reflected blue light, yellow-brown to beige in reflected yellow light; white, pale yellow, or rosy internal reflections observed. *Streak:* Black. *Luster:* Submetallic, resinous on fractures.
Optical Class: Biaxial. *Anisotropism:* Perceptible to strong; pale gray to dark gray with brownish tint. *Bireflectance:* Weak to imperceptible.
R_1–R_2: (400) —, (420) 17.0–19.3, (440) 16.3–18.9, (460) 16.0–18.5, (480) 15.6–18.3, (500) 15.4–18.1, (520) 15.1–17.8, (540) 14.8–17.6, (560) 14.6–17.6, (580) 14.4–17.7, (600) 14.4–18.0, (620) 14.5–18.3, (640) 14.8–18.6, (660) 15.1–18.9, (680) 15.2–18.8, (700) 15.3–18.7

Cell Data: *Space Group: Pnam.* $a = 7.605(3)$ $b = 9.435(4)$ $c = 6.099(2)$ $Z = 4$

X-ray Powder Pattern: Vrančice, Czech Republic.
3.228 (100), 2.625 (81), 5.119 (77), 2.908 (77), 2.663 (53), 4.249 (51), 3.345 (42)

Chemistry:

	(1)
As_2O_5	0.29
V_2O_5	22.88
Sb_2O_5	0.16
FeO	15.15
MnO	4.56
ZnO	0.12
PbO	53.97
CaO	0.29
H_2O	2.58
Total	[100.00]

(1) Vrančice, Czech Republic; recalculated to 100% after deduction of hematite 8.88%, quartz 2.02%; corresponding to $(Pb_{0.93}Ca_{0.02})_{\Sigma=0.95}(Fe^{2+}_{0.81}Mn_{0.25}Zn_{0.01})_{\Sigma=1.07}[(V_{0.96}As_{0.01})_{\Sigma=0.97}O_{3.90}](OH)_{1.10}$.

Mineral Group: Descloizite group.

Occurrence: On specimens from old mine dumps from a polymetallic ore deposit.

Association: Hedyphane, calcite, hematite, willemite, quartz.

Distribution: From Vrančice, about 15 km south-southeast of Příbram, Czech Republic.

Name: To honor Dr. František Čech (1929–1995), Head of the Department of Mineralogy (1976–1990), Charles University, Prague, Czech Republic.

Type Material: Charles University, Prague, Czech Republic, 20037.

References: (1) Mrázek, Z. and Z. Táborský (1981) Čechite, $Pb(Fe^{2+},Mn^{2+})(VO_4)(OH)$, a new mineral of the descloizite–pyrobelonite group. Neues Jahrb. Mineral., Monatsh., 520–528. (2) (1982) Amer. Mineral., 67, 1074 (abs. ref. 1). (3) Pertlik, F. (1989) The crystal structure of čechite, $Pb(Fe^{2+},Mn)(VO_4)(OH)$ with Fe> Mn. A mineral of the descloizite group. Neues Jahrb. Mineral., Monatsh., 34–40.