Ojuelaite  \( \text{ZnFe}_2^{3+} (\text{AsO}_4)_2 (\text{OH})_2 \cdot 4\text{H}_2\text{O} \)

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Crystal Data: Monoclinic. Point Group: 2/m. Acicular crystals or fibers, elongated \( \parallel [001] \), to 4 mm, commonly in divergent sprays.

Physical Properties: Cleavage: On \{010\}, observable. Hardness = 3 D(meas.) = 3.39 D(calc.) = 3.39

Optical Properties: Semitransparent. Color: Chartreuse to pale yellow-green. Streak: Pale yellow. Luster: Silky to vitreous. Optical Class: Biaxial (+). Pleochroism: In yellows. Orientation: X \( = b \); Z \( = c \). Absorption: Z \( > X \). \( \alpha = 1.696 \quad \beta = 1.730 \quad \gamma = 1.798 \quad 2V(\text{meas.}) = \text{n.d.} \quad 2V(\text{calc.}) = 73^\circ \)

Cell Data: Space Group: \( P2_1/c \). \( a = 10.237(1) \quad b = 9.662(3) \quad c = 5.562(1) \quad \beta = 94.36(1)^\circ \quad Z = 2 \)

X-ray Powder Pattern: Ojuela mine, Mexico. 4.251 (100), 2.871 (90), 7.03 (82), 4.83 (78), 10.23 (65), 2.630 (63), 2.901 (62)

Chemistry:

\[
\begin{array}{ccc}
\text{As}_2\text{O}_5 & 40.5 & 40.97 \\
\text{Fe}_2\text{O}_3 & 27.5 & 28.47 \\
\text{ZnO} & 14.6 & 14.51 \\
\text{H}_2\text{O} & 16.8 & 16.05 \\
\hline
\text{Total} & 99.4 & 100.00 \\
\end{array}
\]

(1) Ojuela mine, Mexico; Zn and Fe by AA, As by UV spectrophotometry, \( \text{H}_2\text{O} \) by the Penfield method; corresponds to \( \text{Zn}_{1.02} \text{Fe}_{1.96}^{3+} (\text{AsO}_4)_{2.00} (\text{OH})_{1.92} \cdot 3.37\text{H}_2\text{O} \). (2) Do.; by electron microprobe, analysis not given, stated to correspond to \( (\text{Zn}_{0.77} \text{Fe}_{0.23}^{2+}) \Sigma = 1.00 \text{Fe}_{2.00}^{3+} (\text{AsO}_4)_{1.94} (\text{OH})_2 \cdot 3.75\text{H}_2\text{O} \). (3) \( \text{ZnFe}_2(\text{AsO}_4)_2 (\text{OH})_2 \cdot 4\text{H}_2\text{O} \).

Mineral Group: Arthurite group.

Occurrence: A rare mineral in the oxidized zone of arsenic-rich polymetallic hydrothermal ore deposits.

Association: Paradamite, scorodite, smithsonite, “limonite” (Ojuela mine, Mexico); smithsonite, tennantite, goethite (Tsumeb, Namibia).

Distribution: In the Ojuela mine, Mapimi, Durango, and at Pitiquito, Sonora, Mexico. From Sterling Hill, Ogdensburg, New Jersey, USA. At Tsumeb, Namibia.

Name: For the Ojuela mine, Mexico, in which the first specimens were found.

Type Material: University of Pierre and Marie Curie, Paris, France; National Museum of Natural History, Washington, D.C., USA, 145679.


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