Arsenogoyazite \( \text{(Sr, Ca, Ba)}_3 \text{Al}_3(\text{AsO}_4, \text{PO}_4)_2(\text{OH, F})_5 \cdot \text{H}_2\text{O} \)

Crystal Data: Hexagonal. \textbf{Point Group:} \( \overline{3} \ 2/m \) or \( 3m \). Crystals indistinctly rhombohedral, may show \{0001\}, to 30 \( \mu \text{m} \), aggregated into reniform crusts with a radial structure.

Physical Properties: \textit{Fracture:} Conchoidal. \textit{Hardness =} \( \sim 4 \) \( \text{D(meas.) = 3.35(5)} \) \( \text{D(calc.) = 3.33} \)

Optical Properties: \textit{Translucent.} \textit{Color:} Pale green to gray-green, white to yellowish. \textit{Luster:} Vitreous. \textit{Optical Class:} Isotropic, or nearly so; weak birefringence. \( n = 1.64(3) \)

Cell Data: \textit{Space Group:} \( R\overline{3}m \) or \( R\overline{3}m \). \( a = 7.10 \) \( c = 17.16 \) \( Z = 3 \)

X-ray Powder Pattern: Clara Mine, Germany. 3.03 (10), 3.56 (8), 5.84(7), 1.933 (5), 2.31 (4), 2.27 (4), 1.777 (4)

Chemistry:

\[
\begin{align*}
P_2O_5 & \quad 8.9 \\
As_2O_5 & \quad 25.3 \\
Al_2O_3 & \quad 30.9 \\
FeO & \quad 0.2 \\
CaO & \quad 2.8 \\
SrO & \quad 10.1 \\
BaO & \quad 6.5 \\
F & \quad 3.6 \\
H_2O & \quad [13.2] \\
-O = F_2 & \quad 1.5 \\
\text{Total} & \quad [100.0]
\end{align*}
\]

(1) Clara Mine, Germany; by electron microprobe. Total Fe as FeO, \( H_2O \) by difference; corresponds to \( \text{(Sr}_{0.49}\text{Ca}_{0.25}\text{Ba}_{0.21}\text{Fe}_{0.01})\Sigma=0.96\text{Al}_{3.04}\text{As}_{1.10}\text{(PO}_4)_{0.63}\Sigma=1.73 [(\text{OH})_{4.05}\text{F}_{0.95}]\Sigma=5.00 \cdot 2.07\text{H}_2\text{O} \).

Mineral Group: Crandallite group.

Occurrence: A secondary mineral in a hydrothermal polymetallic barite–fluorite deposit (Clara mine, Germany).

Association: Olivenite, cornwallite, malachite, brochantite, barian pharmacosiderite, arsenogorceixite, cualstibite, quartz, barite (Clara mine, Germany); arsenocrandallite, beudantite, olivenite (Centennial Eureka mine, Utah, USA).

Distribution: From the Clara Mine, near Oberwolfach, Black Forest, Germany. In the Centennial Eureka mine, Tintic district, Juab Co., Utah, USA.

Name: For arsenic in the composition, and its relation to goyazite.

Type Material: University of Stuttgart, Stuttgart, Germany; National Museum of Natural History, Washington, D.C., USA, 150232.