Guérinite \( \text{Ca}_5(\text{AsO}_4)_2(\text{AsO}_3\text{OH})_2 \cdot 9\text{H}_2\text{O} \)

Crystal Data: Monoclinic. Point Group: \( 2/m \). As wedge-shaped prismatic crystals, to 3 mm; in sprays, as spherulites or rosettes of acicular to platy crystals.

Physical Properties: Cleavage: Perfect, || plane of the plates; good, || elongation; poor, ⊥ to elongation. Tenacity: Brittle. Hardness = 1.5 \( D(\text{meas.}) = 2.68–2.76 \) \( D(\text{calc.}) = 2.74 \)

Optical Class: Biaxial (~). Orientation: \( Z = \) elongation; \( X \wedge c = 10^\circ \) ⊥ plane of the plates. Dispersion: \( r > v \), strong; rarely \( r < v \). \( \alpha = 1.574(1) \) \( \beta = 1.582(1) \) \( \gamma = 1.582(1) \) \( 2V(\text{meas.}) = 7^\circ–15^\circ \)

Cell Data: Space Group: \( P2_1/n \) (synthetic). \( a = 17.63(1) \) \( b = 6.734(3) \) \( c = 23.47(2) \) \( \beta = 90.6(1)^\circ \) \( Z = 5 \)

X-ray Powder Pattern: Wittichen, Germany.
14.0 (FF), 3.89 (FF), 3.01 (FF), 2.90 (FF), 3.49 (F), 11.7 (mF), 4.84 (mF)

Chemistry:

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
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<tbody>
<tr>
<td>( \text{As}_2\text{O}_5 )</td>
<td>49.76</td>
<td>49.95</td>
</tr>
<tr>
<td>( \text{CaO} )</td>
<td>30.06</td>
<td>30.47</td>
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<tr>
<td>( \text{H}_2\text{O} )</td>
<td>19.18</td>
<td>19.58</td>
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<tr>
<td>insol.</td>
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<td>Total</td>
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</table>

(1) Sainte-Marie-aux-Mines, France. (2) \( \text{Ca}_5(\text{AsO}_4)_2(\text{AsO}_3\text{OH})_2 \cdot 9\text{H}_2\text{O} \).

Polymorphism & Series: Dimorphous with ferrarisite.

Occurrence: A recent weathering product in oxidizing arsenic-rich mineral deposits.

Association: Realgar, erythrite, quartz, calcite.

Distribution: In Germany, from the Daniel mine, Schneeberg, Saxony; at the Bauhaus district, Richelsdorf, Hesse; from the Anton mine, Heubachtal, near Schiltach, and at Wittichen, Black Forest. At Sainte-Marie-aux-Mines, Haut-Rhin, France. In the USA, at Sterling Hill, Ogdensburg, Sussex Co., New Jersey, and in the Getchell mine, Potosi district, Humboldt Co., Nevada.

Name: Honors Henri Guérin (1906– ), who synthesized the compound.

Type Material: n.d.