Genthelvite

\[ \text{Zn}_4\text{Be}_3(\text{SiO}_4)_3\text{S} \]

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Crystal Data: Cubic. **Point Group:** \( \text{Thm} \). As tetrahedra and tristetrahedra, to 5 cm. Also as irregular segregations, to 25 cm.


Hardness = 6.5 \( E(\text{meas.}) = 3.44 \) to 3.70 \( D(\text{calc.}) = 3.70 \). May fluoresce intense green under LW and SW UV, then phosphorescent.

Optical Properties: *Color:* Red, pink, yellow, pale green, emerald-green; colorless or pink in thin section. *Luster:* Vitreous.

Optical Class: Isotropic. \( n = 1.738 \) to 1.752

Cell Data: *Space Group:* \( \text{P}4_3\text{m} \). \( a = 8.10 \) to 8.15. \( Z = 2 \).

X-ray Powder Pattern: Mont Saint-Hilaire, Canada. \( 3.320 \) (100), \( 1.916 \) (80), \( 2.168 \) (70), \( 2.567 \) (65), \( 1.657 \) (65), \( 1.483 \) (50), \( 1.435 \) (50).

Chemistry:

| \( \text{SiO}_2 \) | \( 30.26 \) | \( 30.70 \) | \( \text{CuO} \) | \( 0.30 \) |
| \( \text{Al}_2\text{O}_3 \) | \( 0.18 \) | \( \text{ZnO} \) | \( 46.20 \) | \( 40.56 \) |
| \( \text{FeO} \) | \( 6.81 \) | \( 11.73 \) | \( \text{BeO} \) | \( 12.70 \) | \( 12.39 \) |
| \( \text{MnO} \) | \( 1.22 \) | \( 1.72 \) | \( \text{S} \) | \( 5.49 \) | \( 5.50 \) |
| \( \text{LOI} \) | \( 0.21 \) | \( \text{O} = \text{S} \) | \( 2.78 \) | \( 2.74 \) | Total 100.41 | 100.04 |

(1) St. Peters Dome, Colorado, USA; average of two analyses, corresponds to \( (\text{Zn}_{3.31}\text{Fe}^{2+}_{0.56}\text{Mn}_{0.10}\text{Cu}_{0.02})_{\Sigma=3.99}\text{Be}_{2.91}\text{Si}_{2.97}\text{O}_{11.72}^\text{S}^{$1.00$} \). (2) Jos, Nigeria; corresponds to \( (\text{Zn}_{2.93}\text{Fe}^{2+}_{0.96}\text{Mn}_{0.14})_{\Sigma=4.03}\text{Be}_{2.92}(\text{Si}_{3.02}\text{Al}_{0.04})_{\Sigma=3.06}\text{O}_{11.99}^\text{S}^{$1.01$} \).

Polymorphism & Series: Forms two series, with danalite, and with helvite.

Occurrence: In miarolitic cavities in granite pegmatites; in alkaline granites and syenites, greisens, and skarns.

Association: Phenakite, herbrandite, hambergite, siderite, sphalerite, willemite, gahnite, topaz, zircon, quartz, microcline, zeolites.


Name: The prefix for Frederick August Ludwig Karl Wilhelm Genth (1820–1893), German-American mineralogist, who described a zinc-rich helvite (danalite), later renamed genthelvite.


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