Rozenite $Fe^{2+}SO_4 \cdot 4H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As cottonball-like concretions and nodules; most commonly as powdery efflorescences or coatings on melanterite.

Physical Properties: Hardness = [2–3] (by analogy to rozenite group members). D(meas.) = 2.293 (synthetic). D(calc.) = 2.29 Soluble in H_2O.

Optical Properties: Semitransparent. *Color:* Colorless, white, pale green. *Streak:* White. *Luster:* Vitreous.
Optical Class: Biaxial (–). $\alpha = 1.527$ $\beta = 1.536$ $\gamma = 1.541$–1.543 (γ') 2V(meas.) = ∼90°

Cell Data: *Space Group:* $P2_1/n$ (synthetic). $a = 5.979(4)$ $b = 13.648(4)$ $c = 7.977(3)$ $\beta = 90°26(10)'$ Z = 4

X-ray Powder Pattern: Manitoba, Canada.
4.47 (10), 5.46 (9), 4.47 (7), 3.40 (6), 6.85 (5), 3.22 (5), 2.953 (5)

Chemistry:

	(1)	(2)	(3)
SO_3	36.29	35.91	35.75
Fe_2O_3		0.80	
FeO	31.13	30.65	32.08
MnO	0.06		
MgO	0.97		
H_2O	32.98	31.90	32.17
Total	[101.43]	99.26	100.00

(1) Staszic mine, Poland; original total given as 100.43%, corresponds to $Fe_{1.01}S_{0.99}O_4 \cdot 3.97H_2O$. (2) Manitoba, Canada; corresponds to $Fe_{0.98}S_{1.02}O_4 \cdot 4.02H_2O$. (3) $FeSO_4 \cdot 4H_2O$.

Mineral Group: Rozenite group.

Occurrence: An uncommon secondary mineral, formed at or below 21 °C and under low humidity directly from copper-free melanterite, in turn an alteration product of pyrite or marcasite; commonly a post-mining product, in lake-bed sediments, or coal seams.

Association: Melanterite, epsomite, jarosite, gypsum, sulfur, pyrite, marcasite, "limonite".

Distribution: In Poland, from Mt. Ornak, Tatra Mountains, and in the Staszic pyrite mine, Rudki. From the Voras Mountains, 17 km north-northwest of Ardéa, Greece. At Alšar (Allchar), near Rošden, Macedonia. In the Cetine mine, near Rosia, Tuscany, Italy. From Bleiberg, Carinthia, Austria. At Ramsbeck, North Rhine-Westphalia, Germany. In England, from the Oughterside coal mine, near Aspatria, Cumbria. In Scotland, at Slateford, near Edinburgh, from the West Mains coal mine, West Calder; and in the Howcommon limestone mine, Kilmarnock. In Canada, in Twp. 24, R28, west of 1st meridian, Manitoba; at the Spatsum claim, south of Ashcroft Manor, British Columbia; in the Dundas quarry, Dundas, Ontario. In the USA, from Bisbee, Cochise Co., Arizona; in the Kalkar quarry, Santa Cruz, Santa Cruz Co., California; at the Goldstrike mine, Lynn district, Humboldt Co., and other localities in Nevada. At Navarana fjord, Freuchen Land, Greenland. From Paddy's River mine, Australian Capital Territory. Additional localities are known.

Name: To honor Zygmunt Rozen (1874–1936), mineralogist and petrographer, Academy of Mining and Metallurgy, Kraców, Poland.

Type Material: Academy of Mining and Metallurgy, Kraców, Poland.

References: (1) Kubisz, J. (1960) Rozenite, $FeSO_4 \cdot 4H_2O$, a new mineral. Bull. acad. polonaise sci., Ser. sci. geol. geogr., 8, 97–113 (in English). (2) (1961) Amer. Mineral., 46, 242–243 (abs. ref. 1). (3) Jambor, J.L. and R.J. Traill (1963) On rozenite and siderotil. Can. Mineral., 7, 751–763. (4) Baur, W.H. (1962) Zur Kristallchemie der Salzhydrate. Die Kristallstrukturen von $MgSO_4.4H_2O$ (Leonhardtit) und $FeSO_4.4H_2O$. Acta Cryst., 15, 815–826 (in German with English abs.).