Bario-orthojoaquinite $(Ba,Sr)_4Fe^{2+}_2Ti_2Si_8O_{26}\cdot H_2O$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. As pseudotetragonal crystals, steep dipyramidal {111} and truncated by {001}, to 8 mm; pyramidal faces are curved and striated; as aggregates.

Physical Properties: *Cleavage:* {001}, good. Hardness = 5.5 D(meas.) = 3.96 D(calc.) = 3.96

Optical Properties: Transparent to translucent. *Color:* Yellow-brown. *Streak:* Pale yellow. *Luster:* Vitreous.
Optical Class: Biaxial (+). *Pleochroism:* X = very pale yellow; Y = pale yellow; Z = yellow. *Orientation:* $X = a$; $Y = b$; $Z = c$. *Dispersion:* $r > v$, strong. *Absorption:* $Z \gg Y > X$.
$\alpha = 1.735$ $\beta = 1.737$ $\gamma = 1.800$ 2V(meas.) = 10°–15°

Cell Data: *Space Group:* $Ccmm$, $Cc2m$, or $Ccm2$. $a = 10.477(5)$ $b = 9.599(1)$ $c = 22.59(1)$ Z = [4]

X-ray Powder Pattern: Gem mine, California, USA.
2.997 (100), 2.953 (95), 2.824 (90), 5.64 (70), 2.935 (70), 4.30 (62), 3.203 (50)

Chemistry:

	(1)
SiO_2	35.15
TiO_2	11.33
Al_2O_3	0.57
RE_2O_3	0.00
FeO	9.47
MnO	0.62
CaO	0.17
SrO	3.34
BaO	38.56
Na_2O	0.12
H_2O	1.3
Total	100.63

(1) Gem mine, California, USA; by electron microprobe, corresponds to $(Ba_{3.44}Sr_{0.44}Al_{0.15}Ca_{0.04})_{\Sigma=4.07}(Fe^{2+}_{1.80}Mn_{0.12}Na_{0.05})_{\Sigma=1.97}(Ti_{1.94}Al_{0.06})_{\Sigma=2.00}Si_{8.00}O_{26}\cdot 0.93H_2O$.

Mineral Group: Joaquinite group.

Occurrence: In a block of highly fractured basalt subjected to high-pressure metamorphism and serpentinization.

Association: Benitoite, baotite, fresnoite, natrolite.

Distribution: At the Gem mine, San Benito Co., California, USA.

Name: For its BARIum content, ORTHOrhombic symmetry, and membership in the *joaquinite* group.

Type Material: University of California, Santa Barbara, California; Harvard University, Cambridge, Massachusetts, 119525; National Museum of Natural History, Washington, D.C., USA, 149428.

References: (1) Wise, W.S. (1982) Strontiojoaquinite and bario-orthojoaquinite: two new members of the joaquinite group. Amer. Mineral., 67, 809–816.