Perettiite-(Y)  

\( \text{Y}^{3+}_{2}\text{Mn}^{2+}_{2}\text{Fe}^{2+}_{4}\text{Si}_{2}\text{B}_{8}\text{O}_{24} \)

Crystal Data: Orthorhombic.  
*Point Group*: 2/m 2/m 2/m.  
As acicular crystals, to 3 mm, elongated along [010] and displaying \{100\} and \{001\}.  
*Twinning*: Intimately twinned causing (010) cross-sections to mimic tetragonal symmetry.

Physical Properties:  
*Cleavage*: Good on \{010\}.  
*Fracture*: Irregular.  
*Tenacity*: Brittle.  
*Hardness* = \( \sim 7 \)  
VHN = 100 (300 g load).  
\( D(\text{meas.}) = \text{n.d.} \)  
\( D(\text{calc.}) = 4.533 \)

Optical Properties:  
*Color*: Yellow.  
*Streak*: Colorless.  
*Luster*: Vitreous.  
*Optical Class*: Biaxial (appears uniaxial due to twinning).  
\( \alpha = 1.82(1) \quad \beta = \text{n.d.} \) (due to twinning)  
\( \gamma = 1.84(1) \quad 2V = \text{n.d.} \)  
Under crossed polars, (010) sections display ‘hourglass pattern’ similar to apophyllite with undulatory extinction.

Cell Data:  
*Space Group*: Pmna.  
\( a = 12.8252(5) \quad b = 4.6187(2) \quad c = 12.8252(5) \quad Z = 2 \)

X-ray Powder Pattern:  
Momeik, Myanmar.  
3.05 (100), 2.64 (67), 2.54 (60), 4.63 (52), 1.84 (52), 1.87 (33), 4.08 (28)

Chemistry:  
(1)  
\( \text{Li}_2\text{O} \quad 0.32 \quad \text{Sm}_2\text{O}_3 \quad 0.24 \)  
\( \text{BeO} \quad 0.75 \quad \text{Gd}_2\text{O}_3 \quad 0.71 \)  
\( \text{B}_2\text{O}_3 \quad 24.86 \quad \text{Tb}_2\text{O}_3 \quad 0.29 \)  
\( \text{MgO} \quad 0.27 \quad \text{Dy}_2\text{O}_3 \quad 2.62 \)  
\( \text{Al}_2\text{O}_3 \quad 0.56 \quad \text{Ho}_2\text{O}_3 \quad 0.53 \)  
\( \text{SiO}_2 \quad 11.26 \quad \text{Er}_2\text{O}_3 \quad 1.78 \)  
\( \text{CaO} \quad 2.02 \quad \text{Tm}_2\text{O}_3 \quad 0.33 \)  
\( \text{MnO} \quad 22.06 \quad \text{Yb}_2\text{O}_3 \quad 2.85 \)  
\( \text{FeO} \quad 4.89 \quad \text{Lu}_2\text{O}_3 \quad 0.38 \)  
\( \text{Y}_2\text{O}_3 \quad 22.32 \quad \text{ThO}_2 \quad 0.33 \)  
\( \text{ZrO}_2 \quad 0.19 \quad \text{Total} \quad 99.56 \)

(1) Momeik, Myanmar; laser ablation-inductively coupled plasma-mass spectrometric analysis supplemented by FTIR and Raman spectroscopy; corresponding to \( \text{Y}^{2.06}_{2}\text{Mn}^{2.24}_{2}\text{Fe}^{2.48}_{4}\text{Si}_{2}\text{B}_{8}\text{O}_{24} \).

Occurrence: As inclusions in gemmy phenakite crystals from pockets in granitic pegmatite.

Association: Schorl, tusionite, columbite-(Mn), albite, fluorapatite, lazulite.

Distribution: From Khetchel, Molo area, Momeik, north of Mogok, Myanmar.

Name: Honors mineralogist and gemologist Adolf Peretti (b. 1957), mineralogist and Head of GRS GemResearch Swisslab AG, Switzerland, who first recognized inclusions in phenakite.

Type Material: Museum of Natural History, Bern, Switzerland (43035).