Pretulite  

Crystal Data: Tetragonal.  
Point Group: 4/m 2/m 2/m.  
Dipyramidal crystals, \{211\}, with small \{100\}, \{111\}, and as anhedral grains, to 200 \(\mu\)m.

Physical Properties:  
Cleavage: Perfect on \{100\}.  
Fracture: Splintery.  
Tenacity: Brittle.  
Hardness \(\sim 5\) \(\text{D(meas.) = n.d. D(calc.) = 3.71}\).  
Weak orange fluorescence under SW UV; bright blue cathodoluminescence.

Optical Properties:  
Transparent to translucent.  
Color: Pink to white.  
Streak: White.  
Luster: Adamantine.  
Optical Class: Uniaxial (+).  
\(\omega = 1.790(5) \quad \epsilon = 1.86(1)\)

Cell Data:  
Space Group: \(I\bar{4}_{1}/amd\).  
\(a = 6.589 \) (1) \(c = 5.806(1)\)  
\(Z = 4\)

X-ray Powder Pattern:  
Höllkogel, Austria.  
3.293 (100), 2.4636 (42), 1.6470 (33), 1.6927 (30), 2.0546 (21), 2.1777 (20), 1.7432 (9)

Chemistry:  
\[
\begin{array}{cccc}
\text{P}_2\text{O}_5 & 50.02 & 50.72 \\
\text{Sc}_2\text{O}_3 & 47.38 & 49.28 \\
\text{Y}_2\text{O}_3 & 1.45 & \\
\hline
\text{Total} & 98.85 & 100.00 \\
\end{array}
\]

(1) Höllkogel, Austria; by electron microprobe, average of 50 determinations on 8 grains; corresponds to \((\text{Sc}_{0.98}\text{Y}_{0.02})\Sigma=1.00\text{P}_{1.00}\text{O}_{4.00}\).  
(2) \(\text{ScPO}_4\).

Occurrence: Rare in lazulite-quartz veins in phyllite-mica schist.

Association:  
Lazulite, muscovite, clinoclore, fluorapatite, rutile, chlorapatite, paragonite, 
augelite, wardite, hydroxyherderite, goyazite, florencite-(Ce), xenotime-(Y), corundum, bearthite.

Distribution:  
In Austria, from the Höllkogel, 12 km south-southwest of Mürzzuschlag, at Fürstenbauer, and additional localities near the Pretulalpe, Styria.

Name:  
For the Pretulalpe, Austria, on which the species was first discovered.

Type Material:  
Landesmuseum Joanneum, Graz; Natural History Museum, Vienna, Austria.

References:  
Pretulite, \(\text{ScPO}_4\), a new scandium mineral from the Styrian and Lower Austrian lazulite occurrences, Austria.  
Amer. Mineral., 83, 625–630.