Niahite

\((\text{NH}_4)(\text{Mn}^{2+}, \text{Mg})\text{PO}_4 \cdot \text{H}_2\text{O})\)

Crystal Data: Orthorhombic. Point Group: \textit{mm}2. Rarely as individual crystals; in radiating and subparallel aggregates of crystals, to 0.5 mm.

Physical Properties: Hardness = n.d. \text{D(meas.)} = 2.39 \text{D(calc.)} = 2.437

Optical Properties: Semitransparent. Color: Pale orange; colorless in thin section. Streak: White. Optical Class: Biaxial (-). \(\alpha = 1.582(2) \quad \beta = 1.604(2) \quad \gamma = 1.609(2) \quad 2V(\text{meas.}) = 54^\circ \quad 2V(\text{calc.}) = 50^\circ\)

Cell Data: Space Group: \textit{Pmn}2_1. \(a = 5.68 \quad b = 8.78 \quad c = 4.88 \quad Z = 2\)

X-ray Powder Pattern: Niah Great Cave, Sarawak, Malaysia. 8.82 (10), 2.832 (9), 2.845 (8), 4.267 (6), 4.79 (5), 3.412 (4), 2.300 (4)

Chemistry: 

\[
\begin{array}{ll}
P_2\text{O}_5 & 37.83 \\
\text{MnO} & 27.21 \\
\text{MgO} & 4.19 \\
\text{CaO} & 1.99 \\
(\text{NH}_4)_2\text{O} & 12.9 \\
\text{H}_2\text{O} & 11.88 \\
\hline
\text{Total} & 96.00
\end{array}
\]

(1) Niah Great Cave, Sarawak, Malaysia; by electron microprobe, total Mn as MnO, N, H, and P by microchemical methods; corresponding to \((\text{NH}_4)_{0.93}(\text{Mn}_{0.72}\text{Mg}_{0.20}\text{Ca}_{0.06})\Sigma=0.98\text{P}_{1.00}\text{O}_{3.95} \cdot 1.23\text{H}_2\text{O}\).

Occurrence: A rare mineral, derived from the breakdown of bat guano (Niah Great Cave, Sarawak, Malaysia).

Association: Newberyite, collophane, hannayite, struvite, variscite (Niah Great Cave, Sarawak, Malaysia); newberyite, sussexite, pyrochroite (Sterling Hill, New Jersey, USA).

Distribution: From the Niah Great Cave, Sarawak, Malaysia. At Sterling Hill, Ogdensburg, Sussex Co., New Jersey, USA. In the Taguchi mine, Shidara, Aichi Prefecture, Japan.

Name: For the place of its first-noted occurrence, the Niah Great Cave, Malaysia.

Type Material: Malaysian Geological Survey, Kuching (Sarawak), Sarawak, Malaysia; Bureau of Mineral Resources, Canberra; Government Chemical Laboratories, Perth, Australia, MDC5089.