Heliophyllite  Pb$_6$As$_2^{3+}$O$_7$Cl$_4$(?)

Crystal Data:  Orthorhombic, pseudotetragonal.  Point Group: n.d.  As acute pyramidal crystals, horizontally striated, also tabular, radiating. Intergrown with ecdemite; in coarsely foliated or granular aggregates, ball-like, massive.

Physical Properties:  Cleavage: \{011\}, nearly perfect.  Hardness = \sim 2  VHN = 96  
D(meas.) = 6.89–7.14  D(calc.) = 7.33


Z = 8

2.84 (100), 2.70 (40), 3.66 (35), 2.06 (25), 1.647 (25b), 1.587 (25), 3.19 (20)

Chemistry:

\begin{center}
\begin{tabular}{lccc}
 & (1) & (2) & (3) \\
As$_2$O$_3$ & 10.85 & 12.28 & 12.01 \\
Sb$_2$O$_3$ & 0.56 & 0.048 & \\
(Fe,Mn)O & 0.07 & \\
FeO & 0.60 & \\
MnO & 0.001 & \\
ZnO & 0.01 & \\
PbO & 81.03 & 80.21 & 81.32 \\
MgO & 0.007 & \\
CaO & 0.08 & 0.05 & \\
Cl & 8.05 & 8.05 & 8.61 & \\
P$_2$O$_5$ & 0.039 & \\
$-\text{O} = \text{Cl}_2$ & 1.82 & 1.85 & 1.94 & \\
Total & 98.82 & 99.45 & 100.00 & \\
\end{tabular}
\end{center}

(1) Harstigen mine, Sweden.  (2) Xitieshan mine, China.  (3) Pb$_6$As$_2$O$_7$Cl$_4$.

Occurrence:  From metamorphosed Fe–Mn orebodies (Sweden); in the oxidation zone above a Pb–Zn deposit (Xitieshan mine, China); in metallic slag exposed to seawater (Laurium, Greece).

Association:  Ecdemite, inesite (Sweden); mimetite, cerussite, calcite (Xitieshan mine, China).

Distribution:  From the Harstigen mine, near Persberg; at Jakobsberg; and at Långban, Värmland, Sweden.  From Laurium, Greece, in slag.  At the Xitieshan Pb–Zn mine, Chaidamu, Qinghai Province, China.

Name:  From the Greek for sun and leaf, in allusion to its color and habit.