Ingersonite $Ca_3Mn^{2+}Sb_4^{5+}O_{14}$

Crystal Data: Hexagonal, pseudocubic. *Point Group:* $\overline{3}$ $2/m$, $3m$, or 32. As crystals with imperfect hexagonal cross sections or as laths, to 0.4 mm; in massive aggregates.

Physical Properties: *Cleavage:* {0001}, perfect; imperfect rhombohedral cleavage. *Fracture:* Uneven. Hardness = n.d. VHN = 974–1097 (100 g load). D(meas.) = n.d. D(calc.) = 5.42

Optical Properties: Transparent to translucent. *Color:* Brownish yellow; medium to light yellow in transmitted light; light gray with yellow and white internal reflections in reflected light. *Streak:* Brownish yellow. *Luster:* Vitreous.
Optical Class: Uniaxial (–).
R_1–R_2: (400) 11.16–11.40, (420) 10.94–11.13, (440) 10.74–10.88, (460) 10.52–10.66, (480) 10.34–10.48, (500) 10.18–10.32, (520) 10.05–10.19, (540) 9.96–10.09, (560) 9.91–10.04, (580) 9.89–10.01, (600) 9.89–10.02, (620) 9.90–10.03, (640) 9.90–10.03, (660) 9.91–10.03, (680) 9.91–10.03, (700) 9.91–10.03

Cell Data: *Space Group:* $P\overline{3}m$, $P3m1$, $P31m$, $P32$, $P3_12$, or $P3_22$. $a = 7.287(3)$ $c = 17.679(9)$ $Z = 3$

X-ray Powder Pattern: Långban, Sweden.
2.965 (100), 1.549 (60), 1.820 (50), 1.810 (50), 2.565 (40), 1.543 (40), 0.9894 (30)

Chemistry:

	(1)	(2)	(3)
Sb_2O_5	74.7	72.6	73.01
FeO	0.2	0.3	
MnO	9.4	9.1	8.01
MgO	0.0	0.3	
CaO	15.9	19.9	18.98
Total	100.2	102.2	100.00

(1–2) Långban, Sweden; by electron microprobe, F present between 1.4% and 3%, total not corrected for $-O = F_2$; (2) corresponds to $Ca_{3.01}Mn_{0.99}(Sb_{3.80}Mn_{0.09}Mg_{0.06}Fe_{0.04})_{\Sigma=3.99}O_{13.70}F_x$. (3) $Ca_3MnSb_4O_{14}$.

Occurrence: In dump material from a metamorphosed Fe–Mn orebody.

Association: Filipstadite, jacobsite, calcite, clinohumite (?).

Distribution: At Långban, Värmland, Sweden.

Name: Honors Dr. Fred Earl Ingerson (1906–1993), geochemist with the U.S. Geological Survey and Emeritus Professor, University of Texas, Austin, Texas, USA.

Type Material: The Natural History Museum, London, England, 1986,410, E.1177; National Museum of Natural History, Washington, D.C., USA, 163012.

References: (1) Dunn, P.J., D.R. Peacor, A.J. Criddle, and C.J. Stanley (1988) Ingersonite, a new calcium-manganese antimonate related to pyrochlore, from Långban, Sweden. Amer. Mineral., 73, 405–412.