Nagelschmidtite $Ca_3(PO_4)_2 \cdot 2(\alpha\text{–}Ca_2SiO_4)$

Crystal Data: n.d. *Point Group:* n.d. As elongated anhedral grains, to 150 μm. *Twinning:* Complexly twinned to produce lamellae intersecting at ~60°.

Physical Properties: Hardness = n.d. D(meas.) = 3.065 (synthetic). D(calc.) = n.d.

Optical Properties: Transparent to translucent. *Color:* Colorless to yellowish or brownish. *Optical Class:* Uniaxial (–); rarely biaxial (+). α = 1.638–1.680 (synthetic). β = 1.642–1.675 γ = 1.652–1.698 2V(meas.) = ~0°–20°

Cell Data: *Space Group:* n.d. Z = n.d.

X-ray Powder Pattern: Hatrurim Formation, Israel.
2.66 (vs), 2.80 (s), 1.94 (s), 3.80 (m), 3.42 (m), 2.20 (m), 1.34 (m)

Chemistry:

	(1)
SiO_2	27.88
Al_2O_3	0.03
Fe_2O_3	0.02
Cr_2O_3	0.03
[MnO]	0.05
MgO	0.03
CaO	62.06
Na_2O	0.82
K_2O	0.84
P_2O_5	8.27
SO_3	0.12
Total	100.15

(1) Hatrurim Formation, Israel; by electron microprobe, some MgO probably a misprint for MnO; corresponding to $(Ca_{3.78}Na_{0.06}K_{0.06})_{\Sigma=3.90}(Si_{1.58}P_{0.40})_{\Sigma=1.98}O_8$.

Polymorphism & Series: α and β polymorphic phases appear to be intergrown in the natural material.

Occurrence: In a complex assemblage of high-temperature contact metamorphosed sedimentary rocks.

Association: Gehlenite, rankinite, perovskite, titanian andradite, magnetite.

Distribution: In the Hatrurim Formation, Israel.

Name: For Guenther Nagelschmidt, chemist who first reported the synthetic compound in slags.

Type Material: n.d.

References: (1) Gross, S. (1977) The mineralogy of the Hatrurim Formation, Israel. Geol. Sur. Israel Bull. 70, 31. (2) (1978) Amer. Mineral., 63, 425–426 (abs. ref. 1). (3) Barrett, R.L. and W.J. McCaughey (1942) The system $CaO - SiO_2 - P_2O_5$. Amer. Mineral., 27, 680–695. (4) Segnit, E.R. (1950) New data on the slag minerals nagelschmidtite and steadite. Mineral. Mag., 29, 173–190.