Proxidecagonite $Al_{34}Ni_9Fe_2$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As anhedral grains to ~20 μm.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 2.619

Optical Properties: Opaque. *Color*: Gray to black. *Streak*: Black. *Luster*: Metallic. *Optical Class*: Anisotropic without rotation tints. *Bireflectance*: Weak to moderate. Non-pleochroic. R_1-R_2: (471.1) 31.2-28.8, (548.3) 32.0-29.4, (586.6) 32.8-30.6, (652.3) 33.7-31.5

Cell Data: *Space Group*: *Pnma*. *a* = 29.013(3) *b* = 8.156(1) *c* = 12.401(2) Z = 4

X-ray Powder Pattern: Khatyrka CV3 carbonaceous chondrite meteorite.
2.045 (100), 2.024 (70), 3.96 (50), 2.069 (50), 2.033 (50), 3.80 (40), 3.403 (40)

Chemistry:

	(1)
Al	58.75
Ni	33.85
Fe	7.09
Si	0.03
Co	0.01
Total	99.76

(1) Khatyrka CV3 carbonaceous chondrite meteorite; average electron microprobe analysis; corresponds to $Al_{33.99}Ni_{9.00}Fe_{1.98}Si_{0.02}Co_{0.01}$.

Occurrence: In shock metamorphosed portions of a CV3 carbonaceous chondrite meteorite.

Association: Trevorite, diopside, forsterite, ahrensite, clinoenstatite, nepheline, coesite, stishovite, pentlandite, Cu-rich troilite, Al-rich taenite, icosahedrite, decagonite, khatyrkite, steinhardtite, hollisterite, kryachkoite, stolperite.

Distribution: From the Khatyrka CV3 carbonaceous chondrite meteorite found at Listvenitovyi Stream, Koryak Upland, Chukotka, Russia.

Name: The prefix, *proxi*, derived from the Latin word *proximus* indicates a species that is a periodic approximant to *decagonite*.

Type Material: Natural History Museum, University of Florence, Italy (3291/I).

References: (1) Bindi, L., J. Pham, and P.J. Steinhardt (2018) Previously unknown quasi-crystal periodic approximant found in space. Scientific Reports, 8, 16271. (2) (2020) Amer. Mineral., 105, 1923 (abs. ref. 1).