Nickelblödite $Na_2Ni(SO_4)_2 \cdot 4H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As flat crystallites, to 150 μm; with smooth forms, perhaps rounded by solution, in efflorescences.

Physical Properties: Hardness = n.d. VHN = 104–139 (5 gm load). D(meas.) = 2.43 D(calc.) = 2.432–2.455

Optical Properties: Translucent. *Color:* Pale yellowish green to pale green; in transmitted light, colorless to pale green.
Optical Class: Biaxial (–). α = 1.504–1.513 β = [1.507–1.518] γ = 1.509–1.520
2V(meas.) = 60°–70°

Cell Data: *Space Group:* $P2_1/a$ (by analogy to blödite). $a = 10.87$ $b = 8.07$ $c = 5.46$ $\beta = 100°43'$ Z = 2

X-ray Powder Pattern: Kambalda, Western Australia.
3.223 (10), 4.466 (9), 3.190 (8), 4.193 (7), 3.720 (6), 2.589 (6), 3.920 (5)

Chemistry:

	(1)	(2)
SO_3	49.00	43.41
FeO	1.03	
NiO	15.41	20.25
CuO	0.04	
MgO	1.53	
Na_2O	16.35	16.80
H_2O	[16.64]	19.54
Total	[100.00]	100.00

(1) Kambalda, Western Australia; by electron microprobe, recalculated to 100% from an elemental analysis, H_2O by difference; corresponding to $Na_{2.02}(Ni_{0.79}Mg_{0.14}Fe_{0.06})_{\Sigma=0.99}(SO_4)_{2.00} \cdot 3.17H_2O$. (2) $Na_2Ni(SO_4)_2 \cdot 4H_2O$.

Occurrence: By evaporation of fluids containing Na, Ni, and SO_4.

Association: Violarite, pyrite, siderite, halite (Kambalda, Western Australia); morenosite (Carr Boyd Rocks mine, Western Australia).

Distribution: From the Durkin nickel mine, Kambalda, 56 km south of Kalgoorlie, and in the Carr Boyd Rocks mine, Goongarrie, Western Australia.

Name: For its relation to *blödite*, with Ni > Mg.

Type Material: Western Australian Museum, Perth, Australia, M.63.1991, M.64.1991, MDC5657; The Natural History Museum, London, England, 1976,378; National Museum of Natural History, Washington, D.C., USA, 136207.

References: (1) Nickel, E.H. and P.J. Bridge (1977) Nickelblödite, $Na_2Ni(SO_4)_2 \cdot 4H_2O$, a new mineral from Western Australia. Mineral. Mag., 41, 37–41. (2) (1977) Amer. Mineral., 62, 1059 (abs. ref. 1).