Sodium pharmacosiderite $(Na,K)_2Fe_4^{3+}(AsO_4)_3(OH)_5 \cdot 7H_2O$

Crystal Data: Cubic. *Point Group:* $\bar{4}3m$. Cubic crystals, to 1 mm, in aggregates.

Physical Properties: *Cleavage:* On {001}, imperfect. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = ∼3 D(meas.) = 2.79(4) D(calc.) = 2.90 for $Na_2Fe_4(AsO_4)_3(OH)_5 \cdot 7H_2O$.

Optical Properties: Transparent to translucent. *Color:* Pale green to dull orange; pale green to colorless in thin section. *Luster:* Vitreous.
Optical Class: Isotropic. $n = 1.705(4)$

Cell Data: *Space Group:* $[P\bar{4}3m]$ (by analogy to pharmacosiderite). $a = 8.012(1)$ $Z = 1$

X-ray Powder Pattern: Marda, Australia.
7.99 (100), 3.27 (80), 2.831 (60), 2.416 (60), 4.61 (50), 2.532 (50), 4.00 (40)

Chemistry:

	(1)
As_2O_5	36.7
Fe_2O_3	35.5
Na_2O	5.8
K_2O	2.7
H_2O	19.3
Total	[100.0]

(1) Marda, Australia; by electron microprobe, total Fe as Fe_2O_3, H_2O by the Penfield method; normalized to 100.0% from an original total of 106.2%, keeping H_2O constant; then corresponding to $(Na_{1.68}K_{0.52})_{\Sigma=2.20}Fe_{4.00}(AsO_4)_{2.87}(OH)_{5.59} \cdot 6.84H_2O$.

Occurrence: Initially found on a museum specimen, presumably an alteration product of arsenopyrite (Marda, Australia).

Association: Pharmacosiderite, scorodite, arseniosiderite, "jarosite", arsenopyrite, quartz (Marda, Australia).

Distribution: In Australia, from Marda, Western Australia, and at Mafeking, Victoria. From the Gold Hill mine, Tooele Co., Utah, USA.

Name: In allusion to *sodium* in the composition and its relation to *pharmacosiderite*.

Type Material: National Museum of Natural History, Washington, D.C., USA, 146392.

References: (1) Peacor, D.R. and P.J. Dunn (1985) Sodium-pharmacosiderite, a new analog of pharmacosiderite from Australia and new occurrences of barium-pharmacosiderite [= barian pharmacosiderite]. Mineral. Record, 16, 121–124. (2) (1986) Amer. Mineral., 71, 230 (abs. ref. 1) (3) Kokinos, M. and W.S. Wise (1993) The Gold Hill mine, Tooele County, Utah. Mineral. Record, 24, 11–22.