## Ammoniojarosite $(NH_4)Fe_3^{3+}(SO_4)_2(OH)_6$



**Crystal Data:** Hexagonal. *Point Group:* $\overline{3}\ 2/m$ or $3m$. Microscopic tabular crystals, some with hexagonal outlines, rhombohedral or short prismatic; in granular lumps and irregular nodules.

**Physical Properties:** Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.112

**Optical Properties:** Semitransparent. *Color:* Pale ocherous yellow; in transmitted light, pale yellow to nearly colorless. *Luster:* Dull, may be waxy to earthy.
*Optical Class:* Uniaxial (–). $\omega = 1.800(5)$ $\epsilon = 1.750(5)$

**Cell Data:** *Space Group:* $R\overline{3}m$ or $R3m$. $a = 7.028$ $c = 17.00$ $Z = 3$

**X-ray Powder Pattern:** Synthetic.
3.114 (100), 3.097 (100), 5.123 (58), 1.988 (30), 1.832 (30), 2.318 (21), 5.811 (14).

**Chemistry:**

| | (1) | (2) |
|---|---|---|
| $SO_3$ | 34.49 | 33.38 |
| $Al_2O_3$ | 0.02 | |
| $Fe_2O_3$ | 49.30 | 49.93 |
| MgO | 0.13 | |
| CaO | 0.05 | |
| $(NH_4)_2O$ | 4.23 | 5.43 |
| $Na_2O$ | 0.22 | |
| $K_2O$ | 1.56 | |
| $H_2O$ | 9.86 | 11.26 |
| insol. | 0.76 | |
| Total | 100.62 | 100.00 |

(1) Utah, USA; corresponds to $[(NH_4)_{0.75}K_{0.16}Mg_{0.06}Na_{0.04}]_{\Sigma=1.01}Fe_{2.87}(SO_4)_{2.00}(OH)_6$.
(2) $(NH_4)Fe_3^{3+}(SO_4)_2(OH)_6$.

**Mineral Group:** Alunite group.

**Occurrence:** Formed in black lignitic shales containing pyrite (Utah, USA).

**Association:** Tschermigite, epsomite, jarosite (Utah, USA); gypsum (Buffalo, Wyoming, USA); aluminite, natrojarosite (Zlatá Baňa district, Slovakia).

**Distribution:** In the USA, from an undefined locality on the "west side of the Kaibab fault, Kane Co., Utah"; from near Buffalo, Johnson Co. and about 5 km south of Wamsutter, Sweetwater Co., Wyoming; at the Sulphur Bank mine, Lake Co. and The Geysers, Sonoma Co., California. From Cebadillas, Potosí, Bolivia. In the Zlatá Baňa district, Slanské Mountains, Slovakia. From Le Kaymar, Aveyron, France. At the Hüttelkogel quarry, near Voightsberg, Austria.

**Name:** As the *ammonium* analog of *jarosite*.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 95654.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 562–563. (2) Odum, J.K., P.L. Hauff, and R.A. Farrow (1982) A new occurrence of ammoniojarosite in Buffalo, Wyoming. Can. Mineral., 20, 91–95. (3) Smith, W.L. and J.E. Lampert (1973) Crystal data for ammoniojarosite. $NH_4Fe_3(OH)_6(SO_4)_2$. J. Appl. Cryst., 6, 490–491.