Zincowoodwardite

$[Zn_{1-x}Al_x(OH)_2][(SO_4)_{x/2}(H_2O)_n]$

TRIGONAL

Locality: Laurion, Greece, and also the Hilarion and the Christiana mines, both at Kamariza, near Laurion, Greece.

Occurrence: Associated minerals are: glaucocerinite, natroglaucocerinite, zaccagnaite, serpierite and hemimorphite.

General appearance: Botryoidal crusts of tabular crystals (5 to 10 μm).

Physical, chemical and crystallographic properties: *Luster*: waxy. *Diaphaneity*: translucent. *Color*: pale bluish to bluish white. *Streak*: white to bluish white. *Luminescence*: not mentioned. *Hardness*: 1. *Tenacity*: sectile. *Cleavage*: not discernible. *Fracture*: not mentioned. *Density*: 2.66 g/cm^3 (meas.), 2.71 g/cm^3 (calc.). **Crystallography**: Trigonal (rhombohedral), probably $R\bar{3}m$ for the -3*R* polytype, *a* 3.065, *c* 25.42 Å, *V* 206.8 Å^3, *Z* = 3, *c*:*a* = 8.2936 (see Comments). Morphology: no forms were mentioned. Twinning: none mentioned. **X-ray powder-diffraction data**: The -3*R* polytype: 8.50 (100) (003), 4.248 (33) (006), 2.600 (5) (012), 2.354 (4) (015), 2.039 (3) (018), 1.532 (2) (110), 1.508 (2) (113). The -1*T* polytype: 8.9 (100) (001), 4.47 (90) (002), 2.65 (30) (100), 2.55 (60) (101), 2.28 (50) (102), 1.98 (30) (103), 1.53 (30) (110), 1.51 (30) (111). **Optical data**: Uniaxial (sign unknown), T 1.5636, g could not be measured, nonpleochroic. The -1*T* polytype has T 1.558. **Chemical analytical data**: ICP–MS analysis gave: CaO 10.4, ZnO 33.3, Al_2O_3 17.2, SO_3 12.6, H_2O 25.1, Total 98.6 wt.%. Empirical formula: $[Zn_{0.47}Cu_{0.15}Al_{0.38}(OH)_{2.00}]$ $[(SO_4)_{0.18}O_{0.01}(H_2O)_{0.59}]$. **Relationship to other species**: It is a member of the hydrotalcite group and closely related to woodwardite, honessite, glaucocerinite, hydrowoodwardite and zaccagnaite. The descriptions of natroglaucocerinite and zaccagnaite are in press.

Name: Denotes the relationship to woodwardite and the dominance of zinc.

Comments: IMA No. 1998–026. The -1*T* polytype gave the following data: Trigonal, probably *P*, *a* 3.063, *c* 8.91 Å, *V* 72.4 Å^3, *Z* = 1, *c*:*a* = 2.9089. Analysis by AAS and CHN gave the empirical formula: $[Zn_{0.55}Cu_{0.12}Al_{0.33}(OH)_{2.00}]$ $[(H_3O)_{0.11}Na_{0.04}(SO_4)_{0.17}(CO_3)_{0.07}(H_2O)_{0.96}]$.

WITZKE, T. & RAADE, G. (2000): Zincowoodwardite, $[Zn_{1-x}Al_x(OH)_2][(SO_4)_{x/2}(H_2O)_n]$, a new mineral of the hydrotalcite group. *Neues Jahrbuch für Mineralogie, **Monatshefte***, 455-465.