Kochsándorite $CaAl_2(CO_3)_2(OH)_4 \cdot H_2O$

Crystal Data: Orthorhombic. *Point Group*: 2/*m 2/m 2/m*. As acicular to bladed crystals, with {100} and {110} dominant, typically in radial aggregates to 200-300 μm.

Physical Properties: *Cleavage*: None. *Fracture*: n.d. *Tenacity*: Very brittle. Hardness = 2-2.5 D(meas.) = 2.486(20) D(calc.) = 2.514 Fluoresces pale yellow under SW and LW UV. Dissolves quickly in dilute HCl with effervescence.

Optical Properties: Transparent to translucent. *Color*: White to colorless. *Streak*: White. *Luster*: Vitreous, silky in aggregates.
Optical Class: Biaxial (-). α = 1.597(3) β = n.d. γ = 1.603(6) 2V(meas.) = n.d. 2V(calc.) = n.d. *Orientation*: n.d. *Dispersion*: Weak, $r < v$.

Cell Data: *Space Group*: *Pnma*. a = 15.564(6) b = 5.591(4) c = 9.112(4) Z = 4

X-ray Powder Pattern: Mány, Tatabánya coalfield, Hungary.
5.9154 (100), 7.8607 (87), 4.3718 (86), 7.7830 (62), 2.9570 (48), 2.9455 (44), 1.9021 (26)

Chemistry:

(1) Mány, Tatabánya coalfield, northeastern Transdanubian Mountains, Hungary; analyses by prompt gamma activation analysis (PGAA), energy-dispersive X-ray spectrometry (EDS), H_2O by thermogravimetry, CO_2 by mass spectrometry correspond to $Ca_{0.9}Al_2(CO_3)_{1.9}(OH)_4 \cdot 1.3H_2O$.

Mineral Group: Dundasite group.

Occurrence: A secondary mineral formed by the contemporaneous weathering of böhmite, pyrite and calcite in brown coal beds.

Association: Intimately intergrown with gibbsite, commonly associated with calcite and gypsum; quartz, pyrite, böhmite, dolomite, calcite, gibbsite, kaolinite, illite, alumohydrocalcite, gypsum, felsöbányaite.

Distribution: From the I/A shaft of the coal mine in Mány, Tatabánya coalfield, northeastern Transdanubian Mountains, Hungary.

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Type Material: Hungarian Natural History Museum, Budapest (568/2004), Herman Ottó Museum, Miskolc (2004-72) and Minerals of the Carpathian Basin (Lajos Kövecses-Varga collection), Siófok, Hungary (12004/1-3).

References: (1) Sajó, I.E. and S. Szakáll (2007) Kochsándorite, a new Ca-Al carbonate mineral species from the Mány coal deposit, Hungary. Can. Mineral., 45, 479-483. (2) (2007) Amer. Mineral., 92, 1777 (abs. ref. 1).