Fluoro-magnesiohastingsite $(Na,K,Ca)Ca_2(Mg,Fe^{3+},Al,Ti)_5(Si,Al)_8O_{22}F_2$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Crystals prismatic to 3 mm.

Physical Properties: *Cleavage*: Perfect on {110}. *Fracture*: n.d. *Tenacity*: Brittle. Hardness = 6 D(meas.) = n.d. D(calc.) = 3.18

Optical Properties: Transparent. *Color*: Reddish brown to yellowish. *Streak*: Light reddish brown. *Luster*: Vitreous.
Optical Class: Biaxial (+). $\alpha = 1.642$ $\beta = 1.647$ $\gamma = 1.662$ 2V(meas.) = 61° 2V(calc.) = 61°
Orientation: $Y = b$, $Z \wedge c = 26°$. *Pleochroism:* Weak; X = yellow-brown, $Y = Z$ = light brown.
Dispersion: None.

Cell Data: *Space Group*: *C*2/*m*. $a = 9.871(1)$ $b = 8.006(2)$ $c = 5.314(1)$ $\beta = 105.37(1)°$ $Z = 2$

X-ray Powder Pattern: Dealul Uroi, Apuseni Mountains, Hunedoara county, Romania.
3.124 (100), 8.421 (61), 3.271 (61), 2.700 (54), 3.377 (44), 2.932 (35), 2.746 (31)

Chemistry:

	(1)
SiO_2	40.77
TiO_2	1.21
Al_2O_3	13.11
Fe_2O_3	6.44
MgO	18.7
CaO	13.99
Na_2O	1.79
K_2O	1.17
F	4.39
-O = F	1.84
Total	99.73

(1) Dealul Uroi, Apuseni Mountains, Hunedoara county, Romania; average of electron microprobe analyses, absence of OH confirmed by IR spectroscopy; corresponding to $(Na_{0.50}K_{0.22}Ca_{0.17})_{\Sigma=0.89}$ $Ca_{2.00}(Mg_{4.03}Fe^{3+}_{0.70}Al_{0.13}Ti_{0.13})_{\Sigma=4.99}(Si_{5.89}Al_{2.11})_{\Sigma=8.00}O_{22.00}F_{2.00}$.

Mineral Group: Amphibole group, calcium amphibole subgroup.

Occurrence: In small cavities in an altered hematite-rich xenolith in trachyandesite.

Association: Titaniferous hematite, augite, phlogopite, enstatite, feldspar, tridymite, titanite, fluorapatite, ilmenite, pseudobrookite.

Distribution: From an abandoned quarry at Dealul Uroi, 10 km east of Deva, Apuseni Mountains, Hunedoara county, Romania.

Name: Signifies an amphibole in the compositional range of *magnesio-hastingsite* with F > Cl, OH.

Type Material: Department of Mineralogy, Landesmuseum Joanneum, Graz, Styria, Austria (83854-83855).

References: (1) Bojar, H-P. and F. Walter (2006) Fluoro-magnesiohastingsite from Dealul Uroi (Hunedoara county, Romania): Mineral data and crystal structure of a new amphibole end-member. Eur. J. Mineral. 118, 503-508. (2) (2007) Amer. Mineral., 92, 703-704 (abs. ref. 1).