Chistyakovaite-(Y) $Al(UO_2)_2(AsO_4)_2(F,OH)\cdot 6.50H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*, 2 *or m*. As imperfect crystals, tabular on {100}, to 2 mm.

Physical Properties: *Cleavage*: Perfect on {100}, imperfect on {001}. *Fracture*: Stepped. *Tenacity*: Brittle. *Hardness* = 2.5 D(meas.) = 3.62(2) D(calc.) = 3.585
Fluoresces bright green in LW UV.

Optical Properties: Transparent to translucent. *Color*: Yellow, colorless in transmitted light. *Streak*: n.d. *Luster*: n.d.
Optical Class: Biaxial (-). α = 1.557(2) β = 1.580(1) γ = 1.580(1) 2V(meas.) = -10(5)° 2V(calc.) < 0° *Orientation*: $X = a$, $Z \approx b$.

Cell Data: *Space Group*: *P*2/*m*, *P*2 or *Pm*. a = 19.99(1) b = 9.79(1) c = 19.62(2) β = 110.7(2)° Z = 8

X-ray Powder Pattern: Bota-Burum deposit, Kazakhstan.
9.34 (100), 9.14 (100), 4.76 (27), 4.87 (20), 4.93 (18), 4.69 (17), 3.55 (14.5)

Chemistry:

	(1)
Al_2O_3	4.99
UO_3	58.34
As_2O_5	21.40
P_2O_5	1.23
F	1.1
H_2O	12.2
-O = F	0.46
Total	98.80

(1) Bota-Burum deposit, Kazakhstan; average of 7 electron microprobe analyses supplemented by IR spectroscopy and TGA, corresponds to $Al_{0.96}(UO_2)_{2.00}[(AsO_4)_{1.83}(PO_4)_{0.17}][F_{0.57}(OH)_{0.31}]\cdot 6.50H_2O$.

Occurrence: A secondary mineral in the weathered zone of a hydrothermal arsenopyrite and 'pitchblende' deposit.

Association: Arsenopyrite, pyrite, galena, scorodite, arseniosiderite, mansfieldite, metazeunerite, trögerite, sodium uranospinite.

Distribution: From the Bota-Burum deposit, south of Lake Alakol, southwestern Balkhash area, Zhambyl (Dzhambul) Region, Kazakhstan.

Name: Honors N.I. *Chistyakova*, a senior assistant at the All-Russia Research Institute of Mineral Resources (VIMS), and the dominant rare earth element, *Y*ittrium.

Type Material: E.V. Kopchenova Collection, Mineralogical Museum, All-Russia Research Institute of Mineral Resources, Moscow (# 350/59), and at the A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (# 3286/1).

References: (1) Chukanov, N.V., G.A. Sidorenko, I.S. Naumova, A.E. Zadov, and V.I. Kuz'min (2006) Chistyakovaite, a new mineral $Al(UO_2)_2(AsO_4)_2(F,OH)\cdot 6.50H_2O$. Dokl. Earth Sci., 407(2), 290-293 (in English); Dokl. Akad. Nauk, 406(6), 816-819 (in Russian). (2) (2006) Amer. Mineral., 91, 1945-1946 (abs. ref. 1).