Oxy-schorl $Na(Fe^{2+}_2Al)Al_6Si_6O_{18}(BO_3)_3(OH)_3O$

Crystal Data: Hexagonal. *Point Group*: 3*m*. As prismatic crystals in fanlike aggregates to 2 cm.

Physical Properties: *Cleavage*: None. *Fracture*: Conchoidal. *Tenacity*: Brittle. Hardness = 7
D(meas.) = 3.17(2)-3.19(1) D(calc.) = 3.208-3.198

Optical Properties: Translucent. *Color*: Greenish to brownish black. *Streak*: Pale gray.
Luster: Vitreous.
Optical Class: Uniaxial (–). ω = 1.662(2) ε = 1.637-1.641(2) *Pleochroism*: distinct, *O* = green to bluish green; *E* = pale yellow to colorless or *O* = dark grayish green; *E* = pale brown.

Cell Data: *Space Group*: *R*3*m*. *a* = 15.916(3) *c* = 7.1071(12) Z = 3

X-ray Powder Pattern: Zlatá Idka, Slovak Republic.
2.569 (100), 2.9354 (59), 1.9104 (54), 3.977 (53), 3.439 (53), 1.9096 (41), 2.0346 (37)

Chemistry:	(1)	(2)	(3)
SiO_2	33.85	34.57	35.22
TiO_2	<0.05	0.72	
Al_2O_3	39.08	33.55	34.87
Fe_2O_3	n.d.	0.61	
FeO	11.59	13.07	14.04
MnO	<0.06	0.10	
MgO	0.04	0.74	
CaO	0.30	0.09	
Na_2O	1.67	1.76	3.03
K_2O	<0.02	0.03	
F	0.26	0.56	
Cl	0.01	<0.01	
B_2O_3	[10.39]	[10.11]	10.20
H_2O	[2.92]	[2.72]	2.64
$- O = F_2$	0.11	0.24	
Total	99.29	98.39	100.00

(1) Zlatá Idka, Slovak Republic; average of 5 electron microprobe analyses supplemented by Mössbauer spectrometry, B_2O_3 and H_2O calculated from structure; corresponds to $^{X}(Na_{0.591}Ca_{0.103}\square_{0.306})_{\Sigma=1.000}{}^{Y}(Al_{1.885}Fe^{2+}_{1.108}Mn_{0.005}Ti_{0.002})_{\Sigma=3.000}{}^{Z}(Al_{5.428}Mg_{0.572})_{\Sigma=6.000}{}^{T}(Si_{5.506}Al_{0.494})_{\Sigma=6.000}O_{18}{}^{B}(BO_3)_3{}^{V}(OH)_3{}^{W}[O_{0.625}(OH)_{0.236}F_{0.136}Cl_{0.003}]_{\Sigma=1.000}$. (2) Přibyslavice, Czech Republic; average of 5 electron microprobe analyses and Mössbauer spectroscopy; corresponds to $^{X}(Na_{0.586}Ca_{0.017}K_{0.006}\square_{0.391})_{\Sigma=1.000}{}^{Y}(Fe^{2+}_{1.879}Mn_{0.015}Al_{1.013}Ti_{0.093})_{\Sigma=3.00}{}^{Z}(Al_{5.732}Mg_{0.190}Fe^{3+}_{0.078})_{\Sigma=6.000}{}^{T}(Si_{5.944}Al_{0.056})_{\Sigma=6.000}O_{18}{}^{B}(BO_3)_3{}^{V}(OH)_3{}^{W}[O_{0.579}F_{0.307}(OH)_{0.115}]_{\Sigma=1.000}$. (3) $Na(Fe^{2+}_2Al)Al_6Si_6O_{18}(BO_3)_3(OH)_3O$.

Polymorphism & Series: Related to oxy-dravite, oxy-chromium-dravite, oxy-vanadium-dravite, and povondraite through the substitution of Fe^{2+} for Mg^{2+}, Cr^{3+} for Al^{3+}, V^{3+} for Al^{3+}, and Fe^{3+} for Al^{3+}, respectively.

Mineral Group: Tourmaline supergroup, alkali-subgroup 3.

Occurrence: Hydrothermal fracture fillings in metasomatized rocks (Slovakia); a metasomatized primary magmatic mineral in granite, now foliated orthogneiss (Czech Republic).

Association: Orthoclase perthite, albite, quartz, muscovite, biotite, garnet, apatite, zircon, magnetite, pyrite, ilmenite (Czech Republic).

Distribution: From the Marianna adit, ~ 2.5 km WNW of Zlatá Idka village, Slovak Ore Mountains (Slovenské Rudohorie), near Košice, eastern Slovakia and the Tisá skála outcrop, ~1 km ENE of Přibyslavice, near Kutná Hora, Central Bohemia Region, Czech Republic.

Name: The prefix *oxy* indicating a *schorl* with $O^{2-} > OH^{1-} + F^{1-}$ in the W site and related to end-member schorl by ${}^{Y}R^{2+} + {}^{W}(OH) \leftrightarrow {}^{Y}Al + {}^{W}O$.

Type Material: For Zlatá Idka, Slovak Republic: East-Slovak Museum, Košice, Slovakia (G12760), and the Department of Mineralogy and Petrology, Comenius University, Bratislava, Slovakia (7279). For Přibyslavice, Czech Republic): Department of Mineralogy and Petrography, Moravian Museum, Brno, Czech Republic (B10521).

References: (1) Bačík, P., J. Cempírek, P. Uher, M. Novák, D. Ozdín, J. Filip, R. Škoda, K. Breiter, M. Klementová, R. Ďuďa, and L.A. Groat (2013) Oxy-schorl, $Na(Fe^{2+}{}_2Al)Al_6Si_6O_{18}(BO_3)_3(OH)_3O$, a new mineral from Zlatá Idka, Slovak Republic and Přibyslavice, Czech Republic. Amer. Mineral., 98, 485-492.