

Wonesite**(Na, K)_{0.5}(Mg, Fe, Al)₃(Si, Al)₄O₁₀(OH, F)₂**

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Crystal Data: Monoclinic. *Point Group:* $2/m$. As irregularly shaped flakes, to about 0.5 mm; exsolves epitaxially-intergrown sodium-rich biotite and talc. *Twinning:* Twin axis [310] and composition plane {001}, common.

Physical Properties: *Cleavage:* {001}, perfect. *Tenacity:* Elastic. Hardness = n.d. D(meas.) = n.d. D(calc.) = [2.89]

Optical Properties: Transparent. *Color:* Pale to dark brown; in thin section, light to dark brown.

Optical Class: Biaxial (-). *Pleochroism:* Strong; X = pale brown; $Y = Z$ = dark brown. $\alpha = 1.544(4)$ $\beta = 1.608(2)$ $\gamma = 1.608(2)$ $2V(\text{meas.}) = 0^\circ\text{--}5^\circ$

Cell Data: *Space Group:* $C2/m$. $a = 5.312(3)$ $b = 9.163(5)$ $c = 9.825(6)$
 $\beta = 103.18(6)^\circ$ $Z = 2$

X-ray Powder Pattern: n.d.

Chemistry:	(1)	(1)	
SiO ₂	48.53	CaO	0.04
TiO ₂	0.77	Na ₂ O	3.07
Al ₂ O ₃	13.73	K ₂ O	0.85
Cr ₂ O ₃	0.08	F	0.15
FeO	7.02	H ₂ O	[4.31]
MnO	0.04	-O = F ₂	[0.06]
MgO	22.11	Total	[100.70]

(1) Mt. Cube quadrangle, Vermont, USA; by electron microprobe, H₂O content is ideal for phlogopite; corresponds to (Na_{0.40}K_{0.07}) $_{\Sigma=0.47}$ (Mg_{2.20}Fe_{0.40}Al_{0.31}Ti_{0.04}) $_{\Sigma=2.95}$ (Si_{3.24}Al_{0.76}) $_{\Sigma=4.00}$ O₁₀(OH, F)₂.

Mineral Group: Mica group.

Occurrence: In metavolcanics with high Mg:Fe, moderate sodium, and very little calcium, metamorphosed at an estimated 535 °C.

Association: Phlogopite, talc, anthophyllite, cordierite, gedrite, chlorite, quartz.

Distribution: From Norwich, Windsor Co., Vermont, and elsewhere in the Post Pond Volcanics, southwest corner of the Mt. Cube quadrangle, New Hampshire and Vermont, USA.

Name: To honor petrologist David R. Wones (1932–1984), Professor of Geology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA.

Type Material: Harvard University, Cambridge, Massachusetts, 127103, 127104; National Museum of Natural History, Washington, D.C., USA, 145724, 162422–162428; The Natural History Museum, London, England, 1982,117.

References: (1) Spear, F.S., R.M. Hazen, and D. Rumble III (1981) Wonesite: a new rock-forming silicate from the Post Pond Volcanics, Vermont. *Amer. Mineral.*, 66, 100–105. (2) Veblen, D.R. (1983) Exsolution and crystal chemistry of the sodium mica wonesite. *Amer. Mineral.*, 68, 554–565.