Wonesite $(Na,K)_{0.5}(Mg,Fe,Al)_3(Si,Al)_4O_{10}(OH,F)_2$

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(meas.) = 0°–5°

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

X-ray Powder Pattern: n.d.

Chemistry:

	(1)		(1)
SiO_2	48.53	CaO	0.04
TiO_2	0.77	Na_2O	3.07
Al_2O_3	13.73	K_2O	0.85
Cr_2O_3	0.08	F	0.15
FeO	7.02	H_2O	[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, H_2O content is ideal for phlogopite; corresponds to $(Na_{0.40}K_{0.07})_{\Sigma=0.47}(Mg_{2.20}Fe_{0.40}Al_{0.31}Ti_{0.04})_{\Sigma=2.95}(Si_{3.24}Al_{0.76})_{\Sigma=4.00}O_{10}(OH,F)_2$.

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.