Wadsleyite β–$(Mg, Fe^{2+})_2SiO_4$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ (probable).
As microcrystalline aggregates with grain sizes to 5.0 μm.

Physical Properties: Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.84

Optical Properties: Transparent. *Color:* Pale fawn [light grayish brown].
Optical Class: Biaxial. $n = 1.76$ 2V(meas.) = n.d.

Cell Data: *Space Group:* *Imma* (probable). $a = 5.70(2)$ $b = 11.71(7)$ $c = 8.24(4)$
Z = 8

X-ray Powder Pattern: Peace River meteorite.
2.452 (100), 2.038 (80), 1.442 (80), 2.886 (50), 2.691 (40), 2.637 (30), 1.567 (30)

Chemistry:

	(1)
SiO_2	38.70
Cr_2O_3	0.01
FeO	22.37
MnO	0.43
NiO	0.11
MgO	38.21
CaO	0.07
ZnO	0.10
Total	100.00

(1) Peace River meteorite; by electron microprobe, corresponding to $(Mg_{1.48}Fe_{0.49}Mn_{0.01})_{\Sigma=1.98}Si_{1.01}O_4$.

Polymorphism & Series: Trimorphous with forsterite and ringwoodite.

Occurrence: In fragments within a vein in a "hypersthene"-olivine chondritic meteorite, believed to have formed during an extraterrestrial shock event.

Association: Majorite, ringwoodite, olivine, orthopyroxene, plagioclase, Fe–Ni alloys, troilite.

Distribution: In the Peace River meteorite.

Name: For Dr. A.D. Wadsley.

Type Material: Department of Geology, University of Alberta, Edmonton, Canada.

References: (1) Price, G.D., A. Putnis, S.O. Agrell, and D.G.W. Smith (1983) Wadsleyite, natural $\beta-(Mg, Fe)_2SiO_4$ from the Peace River meteorite. Can. Mineral., 21, 29–35. (2) (1983) Amer. Mineral., 68, 1040 (abs. ref. 1).