Hafnon $HfSiO_4$

Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. Euhedral to irregular crystals and fragments, to 1 cm, heavily zoned with zircon, the outermost portions of which represent this species.

Physical Properties: Hardness = n.d. D(meas.) = n.d. D(calc.) = 6.97 (synthetic).

Optical Properties: Transparent to translucent. *Color:* Orange-red, brownish yellow, rarely colorless.
Optical Class: [Uniaxial.] ω = n.d. ϵ = n.d.

Cell Data: *Space Group:* $I4_1/amd$ (synthetic). a = 6.5725(7) c = 5.9632(4) Z = 4

X-ray Powder Pattern: Synthetic; cannot be distinguished from zircon.
3.29 (100), 2.512 (70), 4.43 (60), 1.705 (55), 2.638 (25), 2.057 (20), 2.324 (18)

Chemistry:

	(1)	(2)
SiO_2	28.32	27.20
ZrO_2	3.28	1.21
HfO_2	69.78	72.52
Total	101.38	100.93

(1) Muiâne mine, Mozambique; by electron microprobe, corresponding to $(Hf_{0.80}Zr_{0.06})_{\Sigma=0.86}Si_{1.14}O_4$. (2) Do.; by electron microprobe, corresponding to $(Hf_{0.86}Zr_{0.02})_{\Sigma=0.88}Si_{1.12}O_4$.

Occurrence: In tantalum-bearing granite pegmatites (Zambézia district, Mozambique); in a weathered pegmatite (Mt. Holland, Western Australia).

Association: Cookeite, albite (Zambézia district, Mozambique); quartz, potassic feldspar, muscovite, tourmaline, anthophyllite, phlogopite, apatite, cassiterite, ferrocolumbite, beryl, zircon, thorite, microlite, bismoclite, barite, manganotantalite, cesstibtantite, kimrobinsonite (Mt. Holland, Western Australia).

Distribution: In the Morro Conco, Moneia, and Muiâne mines, Morrua area, Zambézia district, Mozambique. At Bikita, Zimbabwe. From near Mt. Holland, Western Australia.

Name: For *hafnium* in the composition.

Type Material: n.d.

References: (1) Correia Neves, J.M., J.E. Lopes Nunes, and T.G. Sahama (1974) High hafnium members of the zircon-hafnon series from the granite pegmatites of Zambézia, Mozambique. Contr. Mineral. Petrol., 48, 73–80. (2) (1976) Amer. Mineral., 61, 175 (abs. ref. 1). (3) Salt, D.J. and G. Hornung (1967) Synthesis and X-ray study of hafnium silicate. J. Amer. Ceram. Soc., 50, 549–550. (4) Speer, J.A. and B.J. Cooper (1982) Crystal structure of synthetic hafnon, $HfSiO_4$, comparison with zircon and the actinide orthosilicates. Amer. Mineral., 67, 804–808.