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Ferrazite is identical to gorceixite

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THE petrographer Dr Jorge Belmiro de Araujo Ferraz submitted for chemical analysis some pebbles ('favas') from the late Eugen Hussak's collection, bearing Hussak's own label 'Pb-Al hydrophost. D.3.095. Neu!'. The pebbles, found in diamond-washings, were discoid in shape, dark yellowish-white, resembling old ivory, and in micro-sections showed a granular structure. The results of the analysis were published by Lee and Moraes (-Rego) (1919 and 1920). The provenance of the samples was not quoted by these authors but was quoted by Ferraz (1928) and Palache *et al.* (1951) as Diamantina, Minas Gerais, Brazil.

From the results of a preliminary analysis it appeared to Lee and Moraes that, in addition to Pb, Ba was also present, which led them to carry out a complete analysis, leading to the following results: BaO 8.87, CaO traces, PbO 45.63, Al_2O_3 3.48, SiO_2 2.44, P_2O_5 26.24, H_2O 14.20, total 100.86 wt.%.

After deducting silica and alumina, possibly derived from kaolin and wavellite, the formula was quoted as $3(Ba,Pb)O{\cdot}2P_2O_5{\cdot}8H_2O$. The density of the pebbles varied between 3.0 and 3.3. The mineral was named ferrazite after Dr J.B.A. Ferraz.

We have obtained a sample, with the same characteristics as above, from Dr J.B.A. Ferraz' collection (now in the Museu de Geociências do Instituto de Geociências da Universidade de São Paulo) labelled as 'Ferrazita. Diamantina, Minas Gerais' (Sample 41.5.8.1/3 - 625A/1). The sample was identified by X-ray powder diffraction (Table 1) and electron microprobe chemical data (Table 2) as gorceixite, $BaAl_3(PO_4)(PO_3OH)(OH)_6$.

The density measured by Hussak and by Lee and Moraes agrees with that for gorceixite ($D_{meas.}$ 3.1 and $D_{calc.}$ 3.41). A mean index of refraction now measured is between 1.620 and 1.625, as in gorceixite.

We have also carried out an electron probe and X-ray diffraction investigation of the type specimen of ferrazite stored in The Natural History Museum, London (B.M. 1920,131). The probe study was carried out on an energy-dispersive Hitachi instrument. The pebble was examined in an unpolished state, so the results should be regarded as semi-quantitative. They are PbO 1.36, BaO 17.17, P_2O_5 19.09, FeO 0.52, ZnO 0.76, Al_2O_3 19.18 wt.%. The Debye-Scherrer X-ray film was taken at the same spot on the sample (film no. X10211) and is a good match for gorceixite.

Lee and Moraes did not quote the method of chemical analysis but they probably analysed Pb and

TABLE 1. X-ray powder diffraction data for 'ferrazite' and gorceixite

1		2			
d	%	d	%	hkl in Cm	
5.775	99	5.7692	93	−1 1 0	−2 0 1+
3.527	68	3.5292	56	−3 1 1	0 2 0+
3.003	100	3.0097	100	−3 1 2	0 2 1+
2.875	22	2.8852	15	0 0 2	2 2 0+
2.490	13	2.4952	11	−2 2 2	4 0 0
2.286	38	2.2925	39	1 1 2	−2 0 3+
2.227	19	2.2320	23	−1 3 1	−4 2 2+
2.030	10	2.0376	11	−1 1 3	4 2 0+
1.915	24	1.9197	29	−3 3 2	−6 0 1+
1.761	18	1.7626	20	−6 2 2	0 4 0+
1.683	9	1.6877	10	−5 1 4	1 3 2+
		1.6647	4	1 1 3	3 3 1+
		1.5780	1	−2 4 2	−5 3 3+
		1.5223	5	5 3 0	−7 1 4+
1.500	10	1.5058	18	−2 2 4	4 0 2+
		1.4402	3	4 4 0	−8 0 4+
1.392	7	1.3977	9	−2 4 3	−5 3 4+

1. 'Ferrazite' from Diamantina, Minas Gerais, Brazil. Cu-$K\alpha$ radiation.
2. Gorceixite from the Big Fish River, Rapid Creek area, Yukon Territory, Canada (Blanchard, 1989).

TABLE 2. Electron microprobe chemical data for 'ferrazite' and gorceixite

	1	2	Range	Probe standard
BaO	30.00	23.52	(22.46–24.99)	BaF_2
PbO		0.53	(0.00–1.65)	galena
SrO		1.81	(1.29–2.25)	celestine
CaO		0.76	(0.66–0.84)	wollastonite
Na_2O		0.06	(0.00–0.19)	andesine
K_2O		0.10	(0.06–0.12)	microcline
Al_2O_3	29.91	31.25	(29.54–32.42)	corundum
Fe_2O_3		3.76	(1.11–8.40)	hematite
P_2O_5	27.76	26.19	(25.13–27.28)	InP
SiO_2		0.95	(0.65–1.18)	wollastonite
H_2O	12.33	(11.07)		
Total	100.00	100.00		

1. Gorceixite, ideal composition $BaAl_3(PO_4)(PO_3OH)(OH)_6$.
2. 'Ferrazite' from Diamantina, Minas Gerais, Brazil (Average of 10 analyses: H_2O by difference)..

Ba by gravimetry with precipitation of $PbSO_4$ and $BaSO_4$, thus confusing Ba with Pb.

In conclusion, ferrazite is identical to gorceixite. The name gorceixite (Hussak, 1906) was published before ferrazite and therefore has historical priority. This nomenclature proposal (number 95-F) was approved by CNMMN - IMA.

KEYWORDS: ferrazite, gorceixite, Minas Gerais, Brazil.

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Comment on 'Morimotoite, $Ca_3TiFe^{2+}Si_3O_{12}$, a new titanian garnet from Fuka, Okayama Prefecture, Japan' by Henmi *et al.* (1995)

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HENMI *et al.* (1995) described a new titanian garnet end-member whose composition can be derived from andradite by the substitution $Ti + Fe^{2+} = 2\ Fe^{3+}$ on octahedral sites, leading to the formula