

work. One of the authors (B.N.D.) is grateful to C.S.I.R. (New Delhi) for partial support of the work.

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*Acta Cryst.* (1965). **18**, 574

## Die Kristallstruktur des sauren Kaliummetasilikates $K_4(HSiO_3)_4$ . Korrektur. Von WALTRAUD

HILMER, *Institut für anorganische Chemie der Deutschen Akademie der Wissenschaften zu Berlin, Berlin-Adlershof, Rudower Chaussee, Deutschland*

(Eingegangen am 16. Oktober 1964)

Auf Einwand von Frau Prof. Boll-Dornberger, im  $K_4(HSiO_3)_4$  würde höhere Symmetrie als monoklin vorliegen, ergab ein Intensitätsvergleich von Aufnahmen verschiedener Kristalle, dass die Abweichungen der Intensitäten von rhombischer Symmetrie auf Absorption zurückzuführen sind. Intensitätssymmetrie, Auslöschungen und *I*-Statistik nach Howells, Phillips & Rogers der früher angegebenen Aufnahmen führen jetzt zur Raumgruppe *Bmab*. Dann ist  $a_{\text{rhomb.}} = |a - c|_{\text{mon.}} = 11,50 \text{ \AA}$ ,  $b_{\text{rhomb.}} = b_{\text{mon.}} = 11,25 \text{ \AA}$ ,  $c_{\text{rhomb.}} = |a + c|_{\text{mon.}} = 9,65 \text{ \AA}$ ;  $Z = 16$ . Berücksichtigung der höheren Symmetrie führt zu folgenden Koordinaten in der rhombischen Zelle:

	<i>x/a</i>	<i>y/b</i>	<i>z/c</i>
K(1)	250	250	737
K(2)	0	043	822
Si(1)	500	184	986
Si(2)	302	0	0

*Acta Cryst.* (1965). **18**, 574

## Crystal data on $FeAlO_3$ . By R. R. DAYAL, J. A. GARD and F. P. GLASSER, *Department of Chemistry, University of Aberdeen, Scotland*

(Received 21 September 1964)

The  $FeAlO_3$  phase was discovered by Richardson, Ball & Rigby (1954), who synthesized it by heating a 1:1  $Fe_2O_3$ - $Al_2O_3$  mixture in oxygen at 1400°C. They also established that the product was a homogeneous single phase, distinct from  $\alpha$ - $Al_2O_3$ ,  $\alpha$ - $Fe_2O_3$  or  $\alpha$ -(Al, Fe) $_2O_3$  solid solutions. This  $FeAlO_3$  phase has subsequently been encountered by others, principally Atlas & Sumida (1958), Muan & Gee (1955) and Muan (1958). The latter workers explored the small range of stoichiometry and the limited range of thermodynamic stability of this phase; for example at  $P_{O_2} = 1 \text{ atm}$ . the stability range is 1318°-1495°C. The present authors encountered the  $FeAlO_3$  compound during equilibrium studies in the system  $CaO$ - $Al_2O_3$ - $Fe_2O_3$ . Powder X-ray data were obtained from nearly pure preparations; these data (Table 1 (c)) agree very closely with those of Richardson *et al.* (1954), rather less well with those of Atlas (1958). Richardson *et al.* obtained a unit cell from trial-and-error procedures; the correctness of the cell was apparently supported by an analogy between  $FeAlO_3$  and that of  $\kappa$ - $Al_2O_3$ . Present efforts to improve the fit between  $d_o$  and  $d_c$  were, however, unsuccessful. Efforts to grow single crystals of  $FeAlO_3$

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	<i>x/a</i>	<i>y/b</i>	<i>z/c</i>
O(1)	0	310	560
O(2)	389	110	044
(= O(2, 3) mon.)			
O(4)	500	199	825
O(5)	227	029	870
(= O(5, 6) mon.)			

Die in der Veröffentlichung angegebenen *R*-Faktoren ändern sich von 13,1% auf 12,8% und von 9,5% auf 9,3% (bzw. 17,6% auf 17,8%). Ein zur Kontrolle berechneter Bereich von (*kl*)-Reflexen führte ebenfalls zu guter Übereinstimmung zwischen  $F_o$  und  $F_c$ .

Die Si-O-Abstände ändern sich im Mittel um 0,01 Å (maximal um 0,03 Å),  $\angle Si(1)-O(2,3)-Si(2) = 140,7^\circ$ .

Ich danke Frau Prof. Boll-Dornberger für ihren Hinweis.

would obviously be handicapped by the limited stability of this phase; the prospect of growing single crystals appeared uninviting. It was therefore decided to examine the relatively fine-grained powders by selected-area electron diffraction.

A 1:1 mixture of coprecipitated hydrous oxides of  $Fe^{3+}$  and  $Al^{3+}$  was prepared. Gentle ignition at ca. 500°C produced a nearly amorphous starting material. Heating at  $1370^\circ \pm 3^\circ \text{C}$  for four days in air gave a nearly pure  $FeAlO_3$  preparation, judging by the near absence of  $\alpha$ - $Al_2O_3$  and  $\alpha$ - $Fe_2O_3$  reflexions in powder photographs.  $Fe_3O_4$  (magnetite) was absent. The sample adhered strongly to a small permanent magnet.

Samples were crushed gently and dispersed in isopropyl alcohol using ultrasonic vibration. Drops of this suspension were transferred to specimen grids carrying carbon films lightly coated with evaporated aluminum for calibration of the camera constant  $\lambda L$ . The specimens were examined with an A.E.I. type EM3 electron microscope equipped with a goniometric stage permitting rotation and a maximum tilt of 45°, modified from a design of Burge & Munden (1960).

Approximately 30 crystals were examined. These all