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NOTE ON THE REVISED COMPOSITION OF TWO OLIVINES FROM THE SKAERGAARD INTRUSION, EAST GREENLAND

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The molecular compositions of two of the four analyzed olivines from the layered rocks of the Skaergaard intrusion (Deer and Wager, 1939) were found by Yoder and Sahama (1957) to give poor agreement with the values obtained by their olivine x-ray determinative method. The two analyses were excluded from their calculations, in one case, in the belief that it was in error, in the other, on the grounds that it appeared anomalous (Yoder and Sahama, 1957, pp. 484–485).

New analyses (by E.A.V.) of two olivines newly separated from equivalent or nearly equivalent rocks show that the original analyses must have been in error. Molecular compositions calculated from the new

TABLE 1. SKAERGAARD OLIVINES

	Analysis wt. % (E. A. Vincent)		Cations to 4 oxygens		$2V_x$ (J. A. V. Douglas)	d_{130} (M. G. Bown)	Calculated from analysis	Calculated from d_{130} using Yoder and Sahama's formula
EG. 5112	SiO_2	35.59	.9992	1.0009				
	Al_2O_3	0.03	.0017					
	Fe_2O_3	0.24	.0050					
	FeO	36.18	.8492		$78° \pm 1°$	2.7944 Å	$Fo_{56.6}Fa_{43.4}$	$Fo_{57.4}$
	MnO	0.45	.0101	1.9904				
	MgO	26.80	1.1205					
	CaO	0.02	.0006					
	TiO_2	0.24	.0050					
		99.55						
EG. 5181	SiO_2	32.47	.9965	0.9977				
	Al_2O_3	0.02	.0012					
	Fe_2O_3	0.18	.0037					
	FeO	53.14	1.3631		$64° \pm 1°$	2.8128 Å	$Fo_{30.4}Fa_{69.6}$	$Fo_{29.9}$
	MnO	0.73	.0184	1.9949				
	MgO	13.22	.6023					
	CaO	not. fd.	—					
	TiO_2	0.34	.0074					
		100.10						

analyses agree well with those determined by the x-ray method using Yoder and Sahama's formula.

The olivines were separated from additional material collected on the 1953 East Greenland Geological Expedition. Sample 5181 was separated from a rock of the same locality as the original sample, 1907, at a structural height[1] of 1800 m in the layered series. Sample 5112 was separated from a rock at a height of 600 m, somewhat higher than the original sample, 4077, collected at about 300 m. The new analyses were made of pure material on a semi-micro scale. Measurements of the d_{130} spacing (by M.G.B.) using a Philips high angle diffractometer followed essentially the procedure of Yoder and Sahama. The d_{130} spacing for the sample 5181 is 2.8128 Å, in excellent agreement with that determined on sample 1907 by Yoder and Sahama (1957, Table 3), namely 2.8126 Å. Sample 5112 has d_{130} of 2.7944 Å, close to the d_{130} value of 2.7951 Å determined by Yoder for the sample 4077. The newly determined $2V_x$ values (by J.A.V.D.) are within 1° of the values given by Deer and Wager (1939). The accompanying table summarizes these results.

This work, done some time ago, was undertaken because a series of further determinations on olivine of the Skaergaard intrusion was being made, and it was necessary to determine whether the Skaergaard olivines conformed to the x-ray and optics of the usual olivine of basic rocks.

References

Deer, W. A. and L. R. Wager (1939) Olivines from the Skaergaard intrusion, Kangerdlugssuaq, East Greenland. *Am. Mineral.* **24,** 18–25.

Yoder, H. S. and T. G. Sahama (1957) Olivine x-ray determinative curve. *Am. Mineral.* **42,** 475–491.

[1] The structural heights quoted are revised values.

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GROWTH OF FORSTERITE CRYSTALS IN A REACTIVE CRUCIBLE[1]

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A recent note by Shankland and Hemmenway (1963) on the growth of forsterite crystals in a Verneuil furnace prompts us to report on our experiences with the production of similar monocrystals using a different method which may have more general applicability. The technique used may be described as a modification of the Bridgman method in that compacted pellets of appropriate composition were melted in a crucible with a pointed bottom which was cooled slowly by power adjustment or by

[1] Contribution No. 57, Hawaii Institute of Geophysics.