CHEMICAL ANALYSIS OF LUNAR SAMPLES FROM THE APOLLO 16 AND 17 COLLECTIONS. J.H. Scoon, Department of Mineralogy and Petrology, University of Cambridge, Cambridge, England.

The composition of lunar samples 61501.15, 67075.22, 60255.42, 68815.120, 64475.34, 72501.36, 72701.23 and 78501.37 are given in Table 1. Their C.I.P.W. norms are shown in table 2. Classical methods of chemical analysis were used, as described by Scoon (1), except that PbO was used as a flux in the determination of total water by the Penfield method in place of Pb CrO_4. The total reducing capacity of these samples was estimated by carrying out the Pratt method for the determination of ferrous iron in the presence of a known excess of a ferric salt. The result was calculated as FeO. The total iron in the samples was also calculated as FeO. The difference between these two figures is shown as ΔRC at the bottom of Table 1.

Reference

(1) Agrell, S.O. and Scoon, J.H. et al.(1970). Observations on the chemistry, mineralogy and petrology of some Apollo 11 lunar samples. Proceedings of the Apollo 11 Lunar Science Conference Geochim. Cosmochim Acta, Supplement I, I. 93-128.

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TABLE 1. Chemical Analyses (Wt.%) of Lunar Rocks

	61501.15	67075.22	60255.42	68815.120	64475.34	72501.36	72701.23	78501.37
SiO_2	45.09	44.42	45.24	45.33	44.81	45.52	45.45	43.15
Al_2O_3	26.78	31.73	26.11	27.59	28.32	20.52	20.70	15.74
Cr_2O_3	0.08	0.06	0.10	0.08	0.07	0.17	0.18	0.31
Fe_2O_3	nil	nil	nil	nil	nil	nil	nil	nil
FeO	5.59	3.00	5.85	5.17	4.64	8.98	8.99	13.33
MnO	0.06	0.04	0.06	0.05	0.06	0.12	0.12	0.18
MgO	6.17	2.35	6.39	5.38	5.61	9.90	9.86	9.98
CaO	15.31	18.12	15.14	15.56	15.88	12.69	12.69	11.65
Na_2O	0.48	0.27	0.46	0.48	0.49	0.50	0.49	0.42
K_2O	0.12	0.03	0.12	0.17	0.12	0.17	0.17	0.11
H_2O^+	nil	nil	nil	nil	nil	nil	nil	nil
H_2O^-	0.06	nil	0.08	0.05	0.05	0.06	0.02	0.03
TiO_2	0.57	0.11	0.69	0.48	0.54	1.62	1.59	5.34
P_2O_5	0.13	0.04	0.12	0.21	0.15	0.14	0.14	0.06
S	0.07	0.01	0.04	0.06	0.07	0.04	0.05	0.09
	100.51	100.18	100.40	100.61	100.81	100.43	100.45	100.39
less $S \equiv O$	0.03	-	0.02	0.02	0.03	0.02	0.02	0.03
	100.48	100.18	100.38	100.59	100.78	100.41	100.43	100.36
ΔRC	0.82	0.22	0.41	0.91	0.79	0.50	0.80	0.75
TotFe as Fe_2O_3	6.08	3.25	6.30	5.54	4.93	9.82	9.75	14.81

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TABLE 2. C.I.P.W. Norms

	61501.15	67075.22	60255.42	68815.20	64475.34	72501.36	72701.23	78501.37
Q	-	-	-	-	-	-	-	-
Or	0.71	0.18	0.71	1.00	0.71	1.00	1.00	0.65
Pl	74.62	87.56	72.72	76.69	78.87	57.47	57.93	44.29
Ab	4.06	2.28	3.89	4.06	4.15	4.23	4.15	3.55
An	70.56	85.28	68.82	72.62	74.72	53.24	53.78	40.74
Di	3.70	3.59	4.48	2.61	2.50	7.15	6.71	13.58
Wo	1.90	1.82	2.30	1.33	1.29	3.67	3.45	6.96
En	1.12	0.93	1.36	0.77	0.79	2.23	2.09	4.08
Fs	0.68	0.85	0.82	0.50	0.43	1.25	1.18	2.55
Hy	11.71	5.75	13.43	12.96	8.50	20.44	20.27	23.24
En	7.32	3.01	8.40	7.89	5.52	13.10	12.96	14.30
Fs	4.39	2.74	5.04	5.06	2.98	7.34	7.31	8.94
Ol	8.06	2.69	7.16	5.66	8.56	10.57	10.81	7.67
Fo	4.85	1.34	4.31	3.32	5.37	6.54	6.66	4.54
Fa	3.21	1.35	2.85	2.35	3.19	4.04	4.14	3.13
Cm	0.12	0.09	0.15	0.12	0.10	0.25	0.27	0.46
Il	1.08	0.21	1.31	0.91	1.03	3.08	3.02	10.14
Ap	0.31	0.09	0.28	0.50	0.36	0.33	0.33	0.14
Py	0.13	0.02	0.07	0.11	0.13	0.07	0.09	0.17
	100.44	100.18	100.32	100.56	100.75	100.37	100.43	100.34