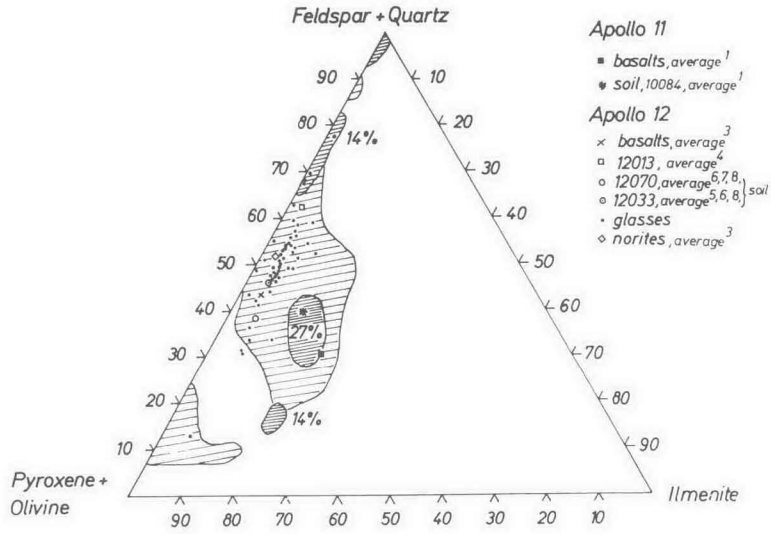


Fig. 9. CIPW norms of glasses, igneous rocks, breccias, and soil of Apollo 11 and Apollo 12. Glass analyses of this work (Apollo 12) are represented by dots. All hatched areas comprise 222 data points of Apollo 11 glass analyses taken from LEVINSON, Vols. 1 and 2 (1970). The narrow-hatched areas comprise the indicated percentage of all data points. References for all other data are designated by superior numerals and listed in caption of Fig. 8.

Modal compositions of individual size fractions, determined by optical microscopy, below 250 $\mu$m in loose grain mounts, above 250 $\mu$m in thin sections of grain mounts, and calculated overall compositions are given in Tables 6 to 8 and Figs. 10 and 11. X-ray examination of the fractions $< 10$ $\mu$m of 10084,106 and $< 20$ $\mu$m of 12001,84 and 12070,139 revealed the presence of pyroxene, plagioclase, ilmenite, cristobalite, metallic iron, and troilite.

Table 6. Modal composition of grain size fractions of Apollo 11 soil (10084,106).

| | 10–20 $\mu$m | 20–63 $\mu$m | 63–125 $\mu$m | 125–250 $\mu$m |
|---|---|---|---|---|
| Basalt | — | — | 4.5 | 19 |
| Anorthosite | — | — | — | 1.5 |
| Breccia | — | — | } 45[3] | } 54[4] |
| Agglomerates | —[1] | —[1] | | |
| Glass fragments, dark | 23 | 31 | 4.1 | 4.4 |
| Glass fragments, light | 11 | 5.1 | 2.8 | 3.1 |
| Regular glass bodies | 4.0 | 1.0 | 1.1 | 1.3 |
| Pyroxene + olivine | 30 | 35 | 31 | 12 |
| Plagioclase | 22 | 19 | 8.6 | 2.4 |
| Opaques | 10[2] | 9.2[2] | 2.0 | 2.4 |
| Pyroxene/plagioclase | 1.4 | 1.8 | 3.6 | 5.0 |

[1] Some agglomerates included in "opaques"; [2] Including some agglomerates; [3] Breccia $\approx$ 11%, agglomerates $\approx$ 34%; [4] Breccia $\approx$ 24%, agglomerates $\approx$ 30%.

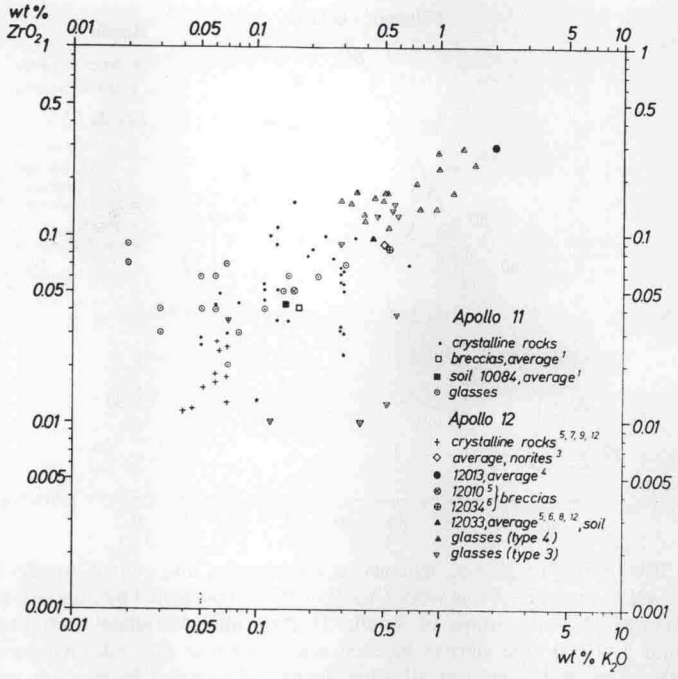


Fig. 8. $ZrO_2$ versus $K_2O$ contents of glasses, igneous rocks, breccias, and soil from Apollo 11 and Apollo 12. Glass analyses of this work are represented by triangles. Data of Apollo 11 glasses and crystalline rocks are taken from LEVINSON (1970), Vols. 1 and 2. References for all other data are designated by superior numerals and are as follows: [1]COMPSTON *et al.* (1970); [2]WOOD (1970); [3]KEIL *et al.* (1971); [4]WAKITA and SCHMITT (1970); [5]LSPET (1970); [6]WAKITA *et al.* (1971); [7]ANNELL *et al.* (1971); [8]ROSE *et al.* (1971); [9]SMALES (1971); [10]MEYER *et al.* (1971); [11]HUBBARD *et al.* (1971); [12]BROWN *et al.* (1971); [13]BRUNFELT *et al.* (1971).

## REGOLITH

The grain size distribution (dry sieving) of Apollo 12 soils 12001,84 and 12070,139, both collected near LM site (SUTTON and SCHABER, 1971), are given in Table 5. The two Apollo 12 soils show nearly identical size distributions, very similar to Apollo 11 soil (ENGELHARDT *et al.*, 1970). Medium diameter is 54 μm for Apollo 12 soils and 48 μm for Apollo 11 soil. On a log-probability plot both size distributions appear slightly bimodal.

Table 5. Grain size distribution of Apollo 12 soils (dry sieving; wt. %).

| μm | 12001,84 | 12070,139 | Average |
|---|---|---|---|
| 1000–500 | 3.3 | 3.7 | 3.5 |
| 500–250 | 7.8 | 9.1 | 8.4 |
| 250–125 | 14.6 | 15.5 | 15.0 |
| 125– 63 | 20.4 | 17.8 | 19.1 |
| 63– 20 | 28.9 | 28.0 | 28.4 |
| < 20 | 25.0 | 25.9 | 25.4 |