15298 REGOLITH BRECCIA, GLASS-COATED ST. 6 1731.0 g

INTRODUCTION: 15298 is a regolith breccia whose coherency is varied, mainly because of numerous and penetrative fractures. It has a glassy matrix and contains numerous small glass, mineral, and lithic fragments, with few large clasts. It has a small area of glass coat (or vein filling) and slickensides. Its composition is similar to local regolith.

15298 is blocky and angular (Fig. 1), very fractured, and greenish gray. Its lunar orientation is partly known, it was one-fourth to one-third buried at collection, and zap pits are particularly common on one surface. 15298 was collected 10 m south of the LRV parking spot.

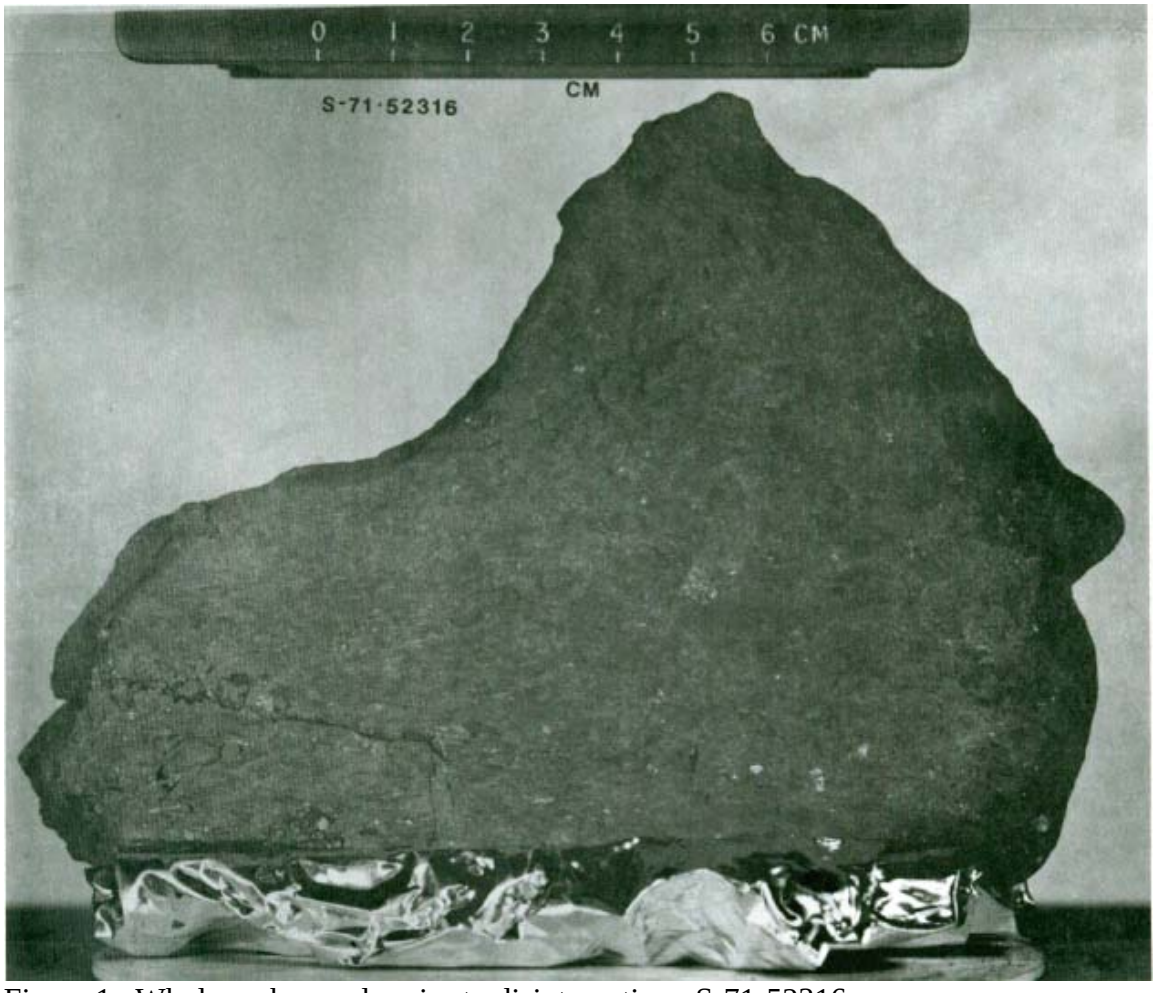


Figure 1. Whole rock sample prior to disintegration. S-71-52316

PETROLOGY: 15298 is a generally fine-grained, brown, glassy breccia (Fig. 2) in which fragments down to a few microns across tend to be angular. Glasses are common as yellow, red, colorless, pale-green, and pale-brown balls and shards; the one (13.6% $TiO_2$) glass analysis presented by Best and Minkin (1972) is the only olivine-normative of such high-Ti glasses that they found among Apollo 15 glasses. Lithic fragments include mare basalts and various breccias. McKay et al.(1984) determined an $I_s$/FeO of 46 to 71; Korotev (1984 unpublished) reported this as 59. Thus 15298 is as mature as most Apollo 15 regoliths.

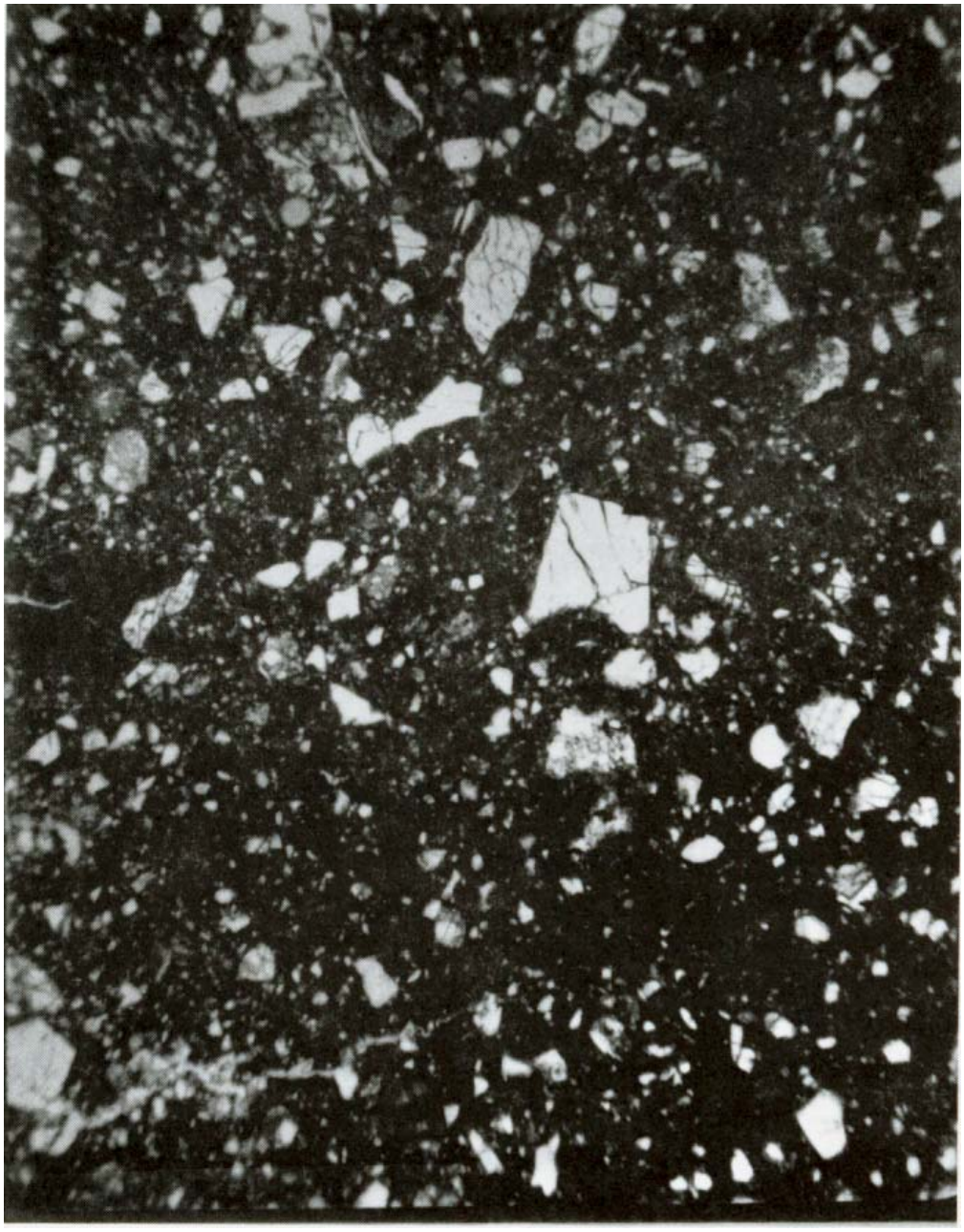

Figure 2. Photomicrograph of breccia matrix
in 15298,6, transmitted light

CHEMISTRY: Chemical analyses are presented in Tables 1 to 3. The composition is very similar to Station 6 soils, although the analysis by Korotev (1984 unpublished) is a little more mafic. Rare earths are plotted in Figure 3. The sample has high C and volatiles normal for soil breccias. The data of Florey et al. (1972) may contain contributions to some elements (e.g., N) from terrestrial contamination. Their $CO_2$ values were very high. Christian et al. (1976) also reported an "excess reducing capacity" determination.

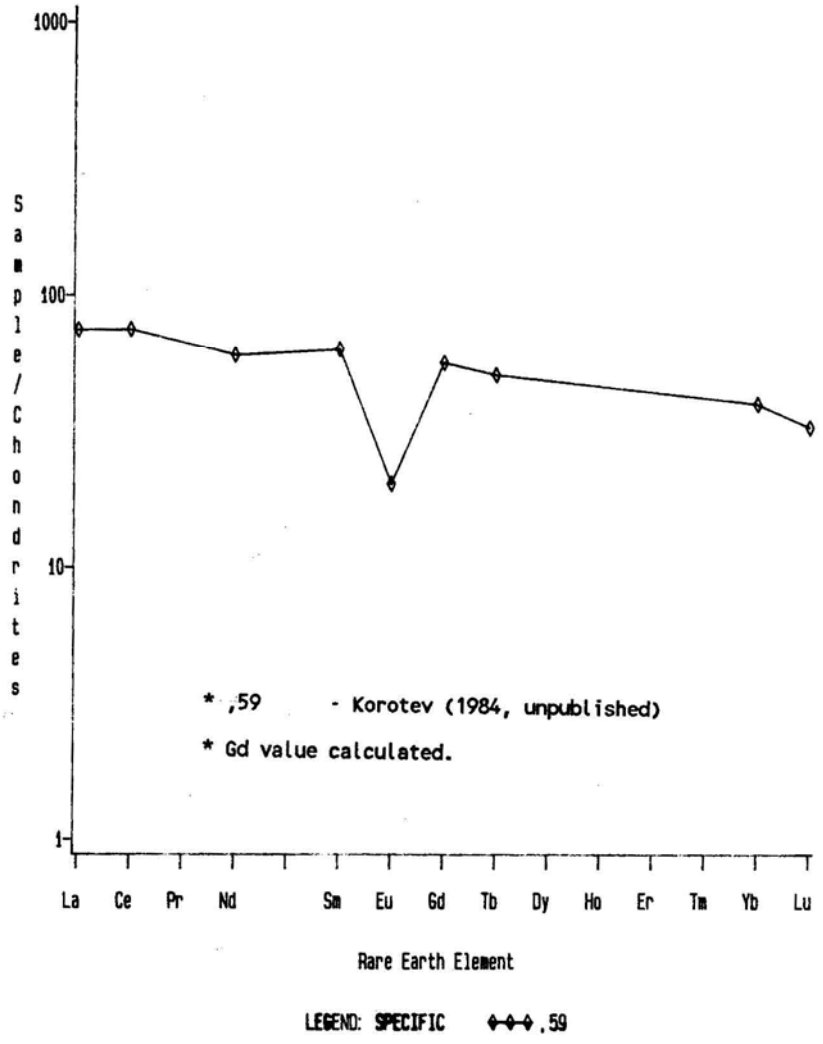


Figure 3. Rare earths in 15298 matrix.

TABLE 15298-1.

| | | ,5 | ,2 | ,26 |
|---|---|---|---|---|
| Wt % | SiO2 | 45.71 | | |
| | TiO2 | 1.56 | | |
| | Al2O3 | 16.55 | | |
| | FeO | 12.83 | | |
| | MgO | 11.05 | | |
| | CaO | 10.76 | | |
| | Na2O | 0.46 | | |
| | K2O | 0.27 | | |
| | P2O5 | 0.26 | | |
| (ppm) | Sc | 24 | | |
| | V | 68 | | |
| | Cr | 2000 | | |
| | Mn | 1400 | | |
| | Co | 36 | | |
| | Ni | 180 | | |
| | Rb | 4.8 | | |
| | Sr | 120 | | |
| | Y | 84 | | |
| | Zr | 390 | | |
| | Nb | 22 | | |
| | Hf | | | |
| | Ba | 270 | | |
| | Th | | | |
| | U | | | |
| | Pb | 2.8 | | |
| | La | 15 | | |
| | Ce | | | |
| | Pr | | | |
| | Nd | | | |
| | Sm | | | |
| | Eu | | | |
| | Gd | | | |
| | Tb | | | |
| | Dy | | | |
| | Ho | | | |
| | Er | | | |
| | Tm | | | |
| | Yb | 11 | | |
| | Lu | | | |
| | Li | 8.0 | | |
| | Be | 2.6 | | |
| | B | | | |
| | C | | 160 | 130 |
| | N | | | |
| | S | | | |
| | F | | | |
| | Cl | | | |
| | Cu | 8.8 | | |
| | Zn | 18 | | |
| (ppb) | I | | | |
| | At | | | |
| | Ga | 4200 | | |
| | Ge | | | |
| | As | | | |
| | Se | | | |
| | Mo | | | |
| | Tc | | | |
| | Ru | | | |
| | Rh | | | |
| | Pd | | | |
| | Ag | | | |
| | Cd | | | |
| | In | | | |
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| | Sb | | | |
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| | W | | | |
| | Re | | | |
| | Os | | | |
| | Ir | | | |
| | Pt | | | |
| | Au | | | |
| | Hg | | | |
| | Tl | | | |
| | Bi | | | |
| | | (1) | (2) | (2) |

References and methods:


(1) Christian et al. (1976); XRF and others

(2) Moore et al. (1972, 1973)

RARE GASES: Data for $^{3}He$, $^{4}He$, $^{22}Ne$, $^{36}Ar$, $^{84}Kr$, and $^{132}Xe$ were presented by LSPET (1972), and Kr and Xe isotopic data were presented by Bogard and Nyquist (1972). The abundances and particularly the ratios are generally similar to Apollo 15 regoliths and other regolith breccias, and are predominantly of solar wind origin.

PROCESSING AND SUBDIVISIONS: The sample was subdivided by chipping, and because of its fragility fell into several parts. The largest pieces are ,8 (607.3 g) in remote storage and ,0 (926.3 g). ,10 to ,19 are pieces up to 20 g which formed during the disintegration. All thin sections (,5 to ,7, and ,20 to ,23) were made from a single chip ,4.

TABLE 15298-2. Organogenic compounds in 15298,24 (2) from acidolysis (ppm) (Florey et al. 1972)

| | $H_2$ | $N_2$ | $CO_2$ | $CH_4$ | $CO_2$ | $C_2$ | $CD_4/CH_4$ |
|---|---|---|---|---|---|---|---|
| 15298,24,2 | 310 | 8.8 | 70 | 45 | 1200 | 3.8 | 2.5 |

TABLE 15298-3. Organogenic compounds in 15298,24 (3) released by volatilization (ppm) (Florey et al. 1972)

| °C | $N_2$ | CO | $CH_4$ | $CO_2$ | $H_2O$ |
|---|---|---|---|---|---|
| 250 | | | | 59 | 74 |
| 500 | 33 | 46 | 11 | 53 | 52 |
| 800 | 130 | 200 | 7.6 | 100 | 40 |
| 1100 | 130 | 390 | | 37 | 55 |