14307

Breccia sample 14307 was collected during the second EVA at station G. This sample was not well-documented because its position had already been changed by the time it was collected. There are no lunar surface photographs of 14307, and its lunar orientation is only known through surface pitting. The rock was placed in documented bag 25N and returned in weigh bag 1031.

PHYSICAL CHARACTERISTICS

Mass	Dimensions
155.0 g	5.0 x 2.5 x 8.0 cm

This is a blocky, subrounded rock with an irregular surface. The color varies from white to dark gray. The rock is friable, but sufficiently strong to prevent clasts from falling out.

SURFACE FEATURES

There are few zap pits (only 15% of surface), but irregular-shaped vugs which range from 0.1 - 0.5 mm in size have been observed. There are many (5-10) irregular superficial cracks 5 - 10 mm in length. One fracture cuts a large white clast and is filled with glass.

PETROGRAPHIC DESCRIPTION

This sample is a polymict breccia with a seriate texture. Twenty to thirty percent of the fragments are larger than 1 mm. Fragments 0.05 -0.10 mm in size are predominately leucocratic, with angular to subrounded shapes. There are two large (> 5 mm) clasts. One clast (5 x 7 mm) is mesocratic. It is composed of 30-35% lath-shaped feldspar (< 2 mm long) associated with two grains of yellow to pale brown olivine. One grain (0.5 x 0.25 mm) is bright green chrome diopside. The other big blocky clast is coarsely crystalline feldspar, with 5% ilmenite laths, and 5%grayish to transparent anhedral material. Sample 14307 is about 5-10% glass, occurring mostly as black to dark gray botryoidal clasts and as vesicular splash.

Thin section 14307,4 was examined by Ridley during PET and described as being a fine-grained clastic rock. The color, under low power in transmitted light, is a mottled dark brown, with abundant white clasts. The largest lithic clast observed is 1.3 x 1.6 mm in size, and angular to subangular in shape, with the average size being 0.2 - 0.3 mm. The average mineral fragment size is 0.05 - 0.15 mm. Clasts are evenly distributed throughout, with no evidence of any concentrations by clast type. Mineral fragments consist of broken fragments of feldspar, clinopyroxene, and orthopyroxene. There are abundant glass fragments which are colorless, pale brown, and dark brown in color, as well as three glass spheres. The groundmass is very difficult to resolve, being almost entirely unrecrystallized, but is dark brown in color, with a mottled texture. This finely comminuted material makes up 61% of the sample.

Lithic clasts are, themselves, breccias and contain lithic microclasts, mineral, and glass clasts. Lithic microclasts are observed to include microclasts of breccia and basalt, but most are breccias. Commonly, glass is pale yellow and flow banded. Some honey-brown glass is present. One large clast has a basaltic texture. It is coarsely poikilitic, and composed of feldspar and clinopyroxene, with accessory anhedral ilmenite. One fragment is very olivine-rich. Some clasts could be noritic.

Opaques present in the groundmass include ilmenite, troilite, and metallic iron, with spheres of iron common. Within the clasts, ilmenite, spinel, ulvospinel, troilite and metallic iron are seen.

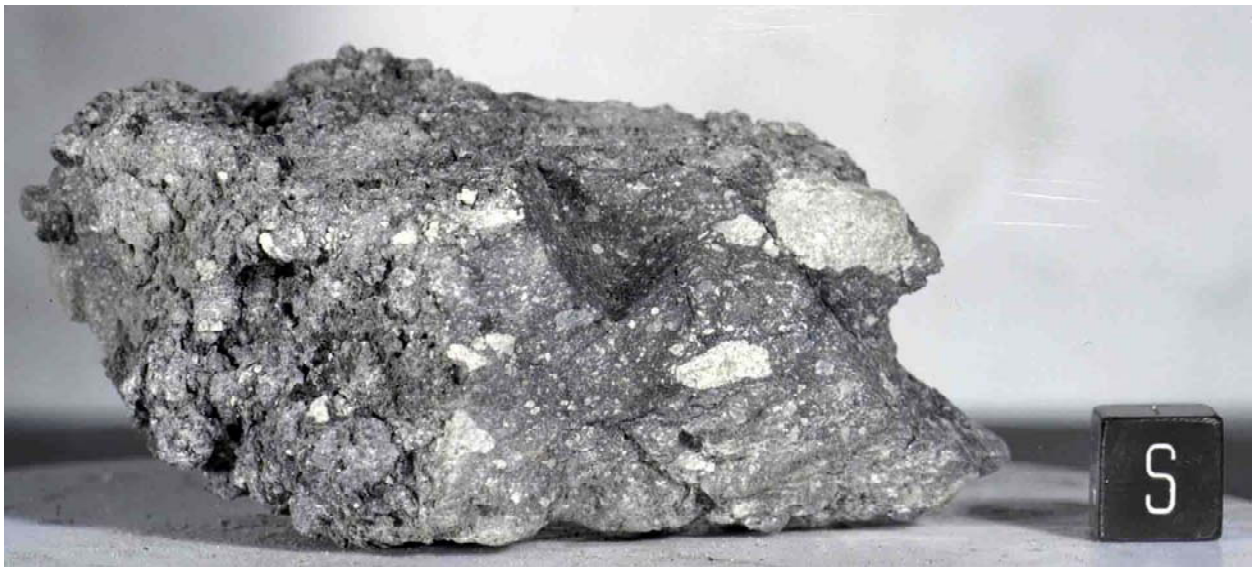
DISCUSSION

Sample 14307 is classified as a shocked regolith microbreccia (1 c) by Chao et al., (1972), and placed in Warner's group 1. Wilshire and Jackson list it as F2, and von Engelhardt et al., (1972), call it a glass-rich regolith breccia. Simonds et al., (1977), likewise, place it in their vitric-matrix breccia category.

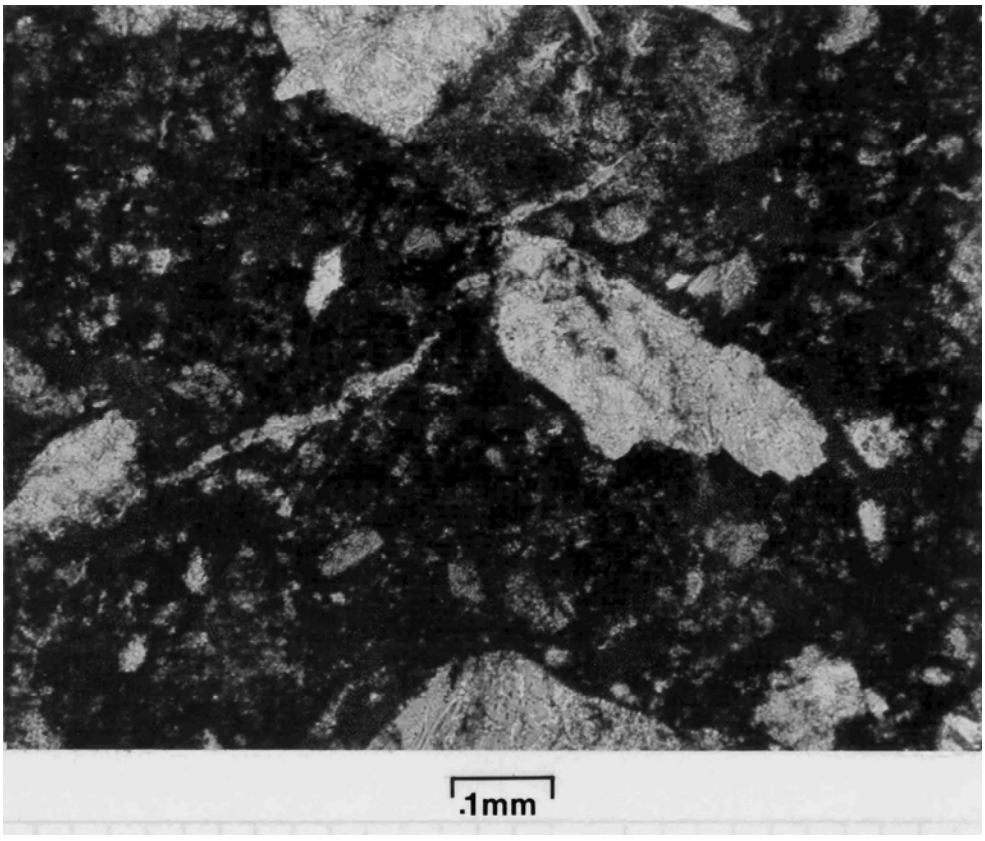
Hörz et al., (1972) studied 14307 to determine the surface orientation of it. They found that part of the glass splatter has been removed by micro-meteoroid bombardment. The preservation of uncrate red, highly vesicular glass splashes, which are very delicate, is said to be an indication that the rock did not tumble after the glass was deposited.

Berdot et al., (1972) found, during their irradiation studies of 14307, that it is KREEP-rich, with a mean model age (T_{BABI}) for the KREEP material of about 4.4 b.y. (Nyquist, et al., 1972). A compaction of 14307 resulted from the Imbrium event, dated at 3.8 b.y. (Wasserburg and Papanastassiou, 1971), then the time to produce the observed track density is too short with the present solar flare activity.

Berdot et al., (1972), also note that the dark matrix of 14307 contains the "largest absolute amount of 'excess' ^{40}Ar ever measured in a lunar sample, with a $^{40}Ar_{exc}/^{36}Ar$ ratio of 4.8.



Block is 1 cm, S-71-30361



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