

14073, 14074, 14078, 14079

All of the samples came from the bottom of the trench taken at Station G, 230 m ESE of LM and 50 m E of North Triplet rim crust.

The area is marked by a nearly level terrain with a sparse amount of debris scattered throughout. The debris ranges in size from the limit of resolution up to 60 cm. There is a moderate abundance of subdued 20 to 50 cm craters in the area.

All samples were returned in documented bag 20N in ALSRC 1006.

PHYSICAL CHARACTERISTICS

Sample Number	Mass	Dimension
14073	10.4 g	2.8 x 2.0 x 1.5 cm
14074	5.2 g	1.0 x 1.5 x 2.5 cm
14078	8.3 g	2.9 x 1.5 x 1.2 cm
14079	3.2 g	1.6 x 1.2 x 0.6 cm

These samples are very light gray, very coherent, holocrystalline, melt rocks.

SURFACE FEATURES

Originally only sample 14074 had zap pits on any surface. Even on this sample they were very few and widely scattered. Where present, they were described as being glass lined and ranging in size from 0.5 to 1.0 mm. The pits had good halos around them, but no pits are visible on the sample anymore.

All of the samples contain cavities or vugs. Most of the cavities are irregular to elongate and range in size from 0.5 to 1.5 mm and most fall in the 1-1.5 mm size range constituting around 1% of the volume of the rocks. Many contain protruding crystals of plagioclase. Some small clusters of cavities can be seen.

Sample 14073 and 14074 each have fractures present while 14078 and 14079 have no surface fractures.

The fractures in 14073 have one set which makes a 30° angle to the long axis of the sample. The fractures in 14074 are non-planar and occur in two sets of one member each. One set is diagonal to all surfaces and the other makes an angle of 20° to the other. Neither fracture surfaces can be seen.

PETROGRAPHIC DESCRIPTION

All samples are light gray in color and equigranular in texture with a grain size of approximately 0.25 mm to 0.5 mm. These samples are all holocrystalline and basaltic in nature. The observable minerals are plagioclase, pyroxene, olivine and opaques. Some of the feldspar is poikilitic. The major minerals are plagioclase and pyroxene with lesser amounts of olivine and a small amount of opaques.

Thin section 14073,10 shows an interlocking network of plagioclase laths with large anhedral crystals of pyroxene unevenly distributed throughout the section. Several large masses of pyroxene have only minor plagioclase associated with them while other masses are interspersed in the tightly grouped plagioclase network. There appear to be two generations of plagioclase. Plagioclase comprises approximately 60% of the section and pyroxene, 40%. Minor amounts of brown mesostasis and opaques are also present.

Thin section 14074,4 is a typical crystalline rock composed of plagioclase and pyroxene in a diabasic texture. The long blades or wide laths of plagioclase enclose the much smaller anhedral masses of pyroxene. The plagioclase shows well developed twin planes. The pyroxene shows some zoning with numerous inclusions and some of the pyroxene crystals show cleavage traces. All show some shock effects.

It is apparent that at least two generations of plagioclase are present. There are some very small short bladed crystals, in addition to the two types of larger crystals, suggesting that there may be three generations present. A late stage plagioclase crystallization appears to have occurred, resulting in small masses of anhedral plagioclase and a small amount of mesostasis.

The rock consists of approximately 60% plagioclase and 40% pyroxene with only small amounts of opaques and mesostasis.

Section 14078,4 is also crystalline, with a subophitic texture. It contains slightly more pyroxene than plagioclase (60:40), and some mesostasis is present. Most of the crystals show some evidence of shock. There are at least two generations of plagioclase crystals present. The pyroxene crystals are anhedral in shape, occurring as masses. Some twinning is present. All samples are similar in appearance to 14310.

The major constituents of 14078,3 are plagioclase (64.4 volume %) and low Ca pyroxene (22.2 volume %) the later is primarily pigeonite but one large orthopyroxene crystal was observed. Olivine (6.5 volume %), augite (3.3 volume %), Si- and K- rich mesostasis (2.3 volume %), and ilmenite (0.5 volume %) are minor constituents reported by McKay et al. (1978). They also observed traces of calcium phosphate, K-feldspar, troilite and metal. The texture of 14078,3 as reported by them is similar to 14310 ranging from subophitic to intergranular. They observed a suggestion of "textural heterogeneity" which they describe as a few small (smaller than 0.5 mm) fine-grained patches resembling the fine-grained areas in 14310 reported by James (1973).

DISCUSSION

The only samples which have been studied are 14073 and 14078. Gancarz et al. (1971) and El Goresy et al. (1972) have described the general petrology and geochemistry of 14073 as being similar to that of 14310. They have described several of the opaque minerals which are present in the sample.

Clayton et al. (1972) have done oxygen isotopic studies and conclude that 14073 show typical "igneous" values.

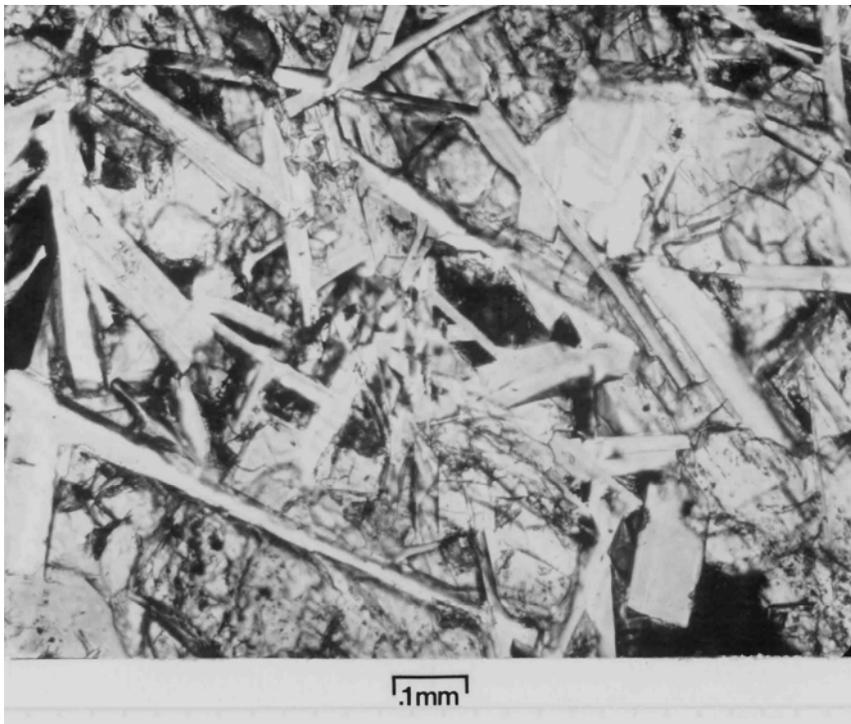
Age determinations for 14073 have been performed by Papanastassiou and Wasserburg (1971), Tera and Wasserburg (1972) and Turner et al. (1972). The Ar^{40} - Ar^{39} age has been determined as 3.88 ± 0.05 AE and an exposure age of 113 million years.

Wilshire and Jackson (1972) have classified the samples as Group B (basaltic) crystalline rocks. Simonds et al. (1977) classify 14073 as a CMB of the clast laden impact melt variety. McKay et al. (1978) have described recently the general petrology and geochemistry of 14078. They report:

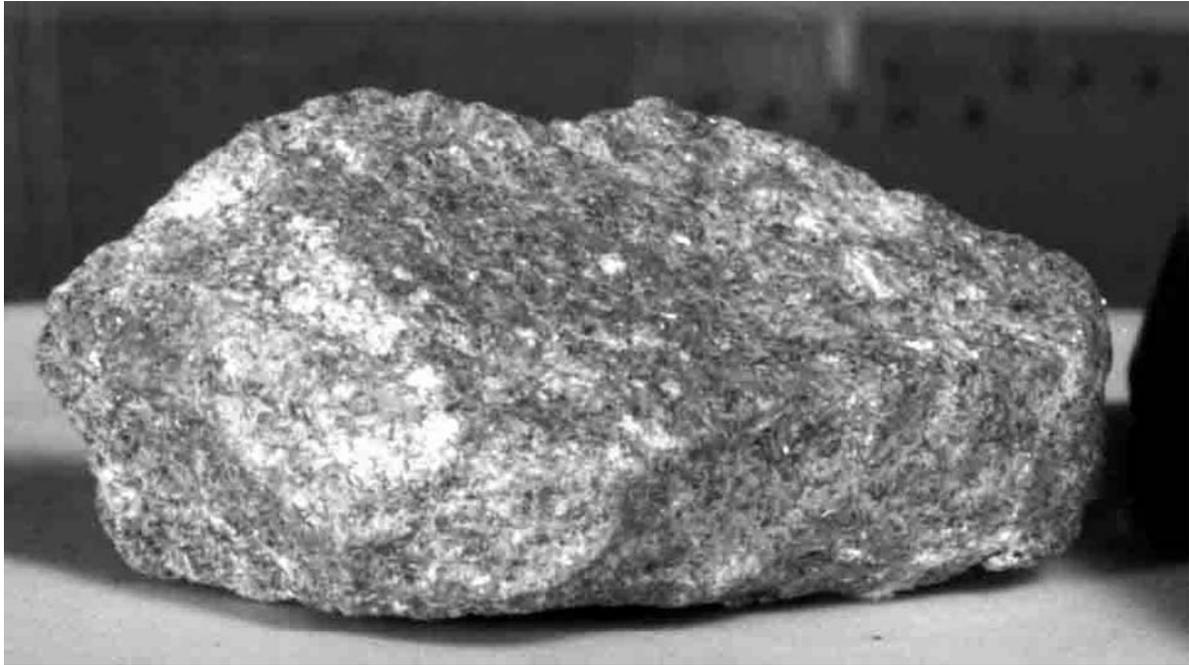
- 1) the REE content of 14078 is 10-15% higher than that of 14073;
- 2) the age of 14078 is $3.89 \pm .02$ B.Y. old. The initial $^{87}Sr/^{86}Sr$ is 0.70051 ± 5 . Therefore, 14073, 14310, and 14001,7,3 are the same age, within the error listed.
- 3) Petrographic and chemical data permit derivation of these samples, as well as 14152,5,102, from the same liquid.



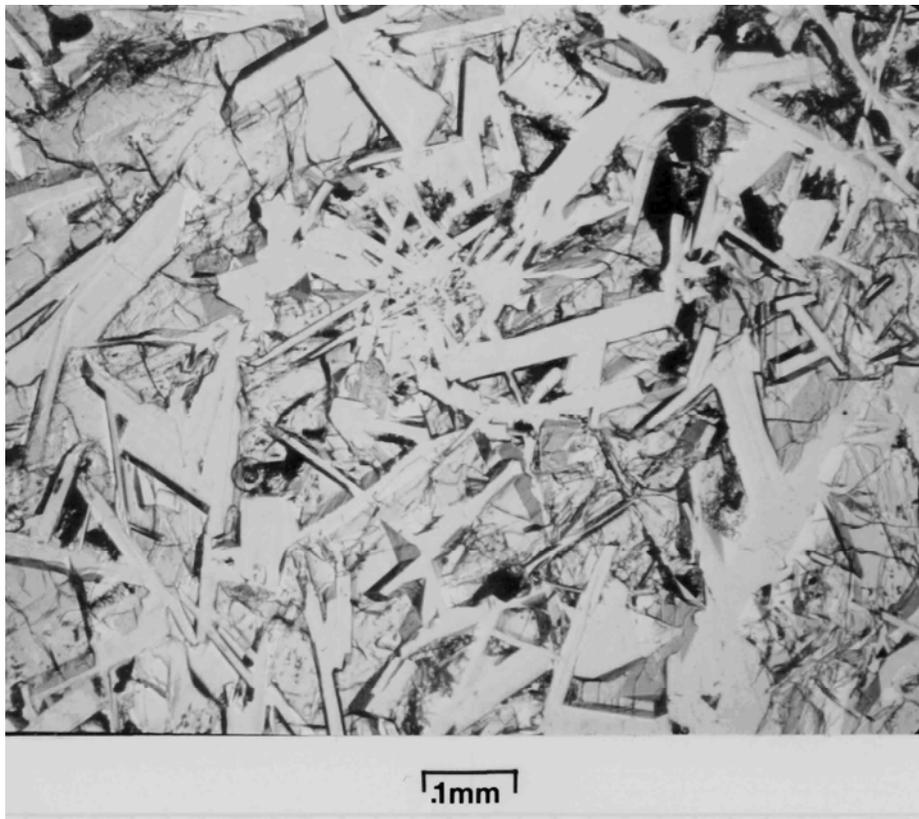
14073: width of image is approximately 3 cm, S-71-26079



14073,7



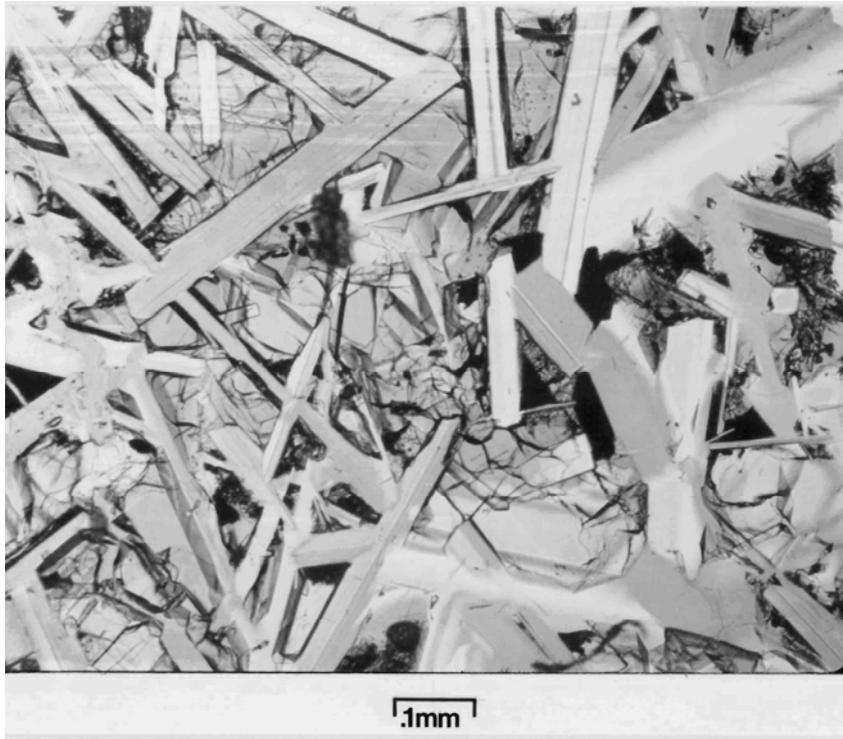
14074: width of image is approximately 3 cm, S-71-26059



14074,4



14078: width of image is approximately 3.5 cm, S-71-26046



14078,4



14079: width of image is approximately 1.8 cm, S-71-26050