

71557**High-Ti Mare Basalt****40.35 g****INTRODUCTION**

See "Rake Sample Descriptions" and "Table of Rake Samples", as well as Fig. 1.

PETROGRAPHY AND MINERAL CHEMISTRY

Warner et al. (1975b,c, 1976a,b, 1978) reported the petrography and mineral chemistry of 71557. However, the mineral chemistry is reported only within the general context of petrographic type and not specifically mentioned. During the preparation of this

catalog, we examined thin section 71557,6 and found it to be a well-crystallized, coarse-grained (0.4-1mm), sub-ophitic to plagioclase-poikilitic basalt. It is comprised of pink pyroxene and plagioclase, with olivine forming rounded cores to the larger pyroxenes. Blocky ilmenites (0.4-1mm) form an intersertal texture with plagioclase and pyroxene and contain rutile and chromite exsolution features. Interstitial SiO_2 (0.2-0.5mm) is present. Native Fe and troilite (up to 0.2mm) are disseminated throughout. No armalcolite was observed.

WHOLE-ROCK CHEMISTRY

Warner et al. (1975) reported the whole-rock composition of 71557,1 in a study of Apollo 17 rake samples (Table 1). 71557 is classified as a Type 131 Apollo 17 high-Ti basalt, based on the classification of Rhodes et al. (1976) and Warner et al. (1979), plus the criteria of Neal et al. (1990). This sample contains 13.0 wt% TiO_2 , with a MG# of 44.2. The REE profile (Fig. 2) is LREE-depleted with a maximum at Dy, although the uncertainties associated with



Figure 1: Hand specimen photomicrograph of 71557,0. Cubic scale = 1 cm³.

Table 1: Whole-rock chemistry of 71557.

Data from Warner et al. (1975).

| Sample 71557,9001 Method N | | Sample 71557,9001 Method N | |
|--------------------------------|-------|-------------------------------|------|
| SiO ₂ (wt %) | | Cu | |
| TiO ₂ | 13.0 | Ni | |
| Al ₂ O ₃ | 9.3 | Co | 19.3 |
| Cr ₂ O ₃ | 0.508 | V | 120 |
| FeO | 19.1 | Sc | 80 |
| MnO | 0.235 | La | 4.8 |
| MgO | 8.5 | Ce | 24 |
| CaO | 10.5 | Nd | |
| Na ₂ O | 0.41 | Sm | 7.5 |
| K ₂ O | 0.057 | Eu | 1.72 |
| P ₂ O ₅ | | Gd | |
| S | | Tb | 1.8 |
| Nb (ppm) | | Dy | 13 |
| Zr | | Er | |
| Hf | 6.8 | Yb | 7.2 |
| Ta | 1.7 | Lu | 1.1 |
| U | | Ga | |
| Th | | F | |
| W | | Cl | |
| Y | | C | |
| Sr | | N | |
| Rb | | H | |
| Li | | He | |
| Ba | | Ge (ppb) | |
| Cs | | Ir | |
| Be | | Au | |
| Zn | | Ru | |
| Pb | | Os | |

Analysis by: N = INAA.

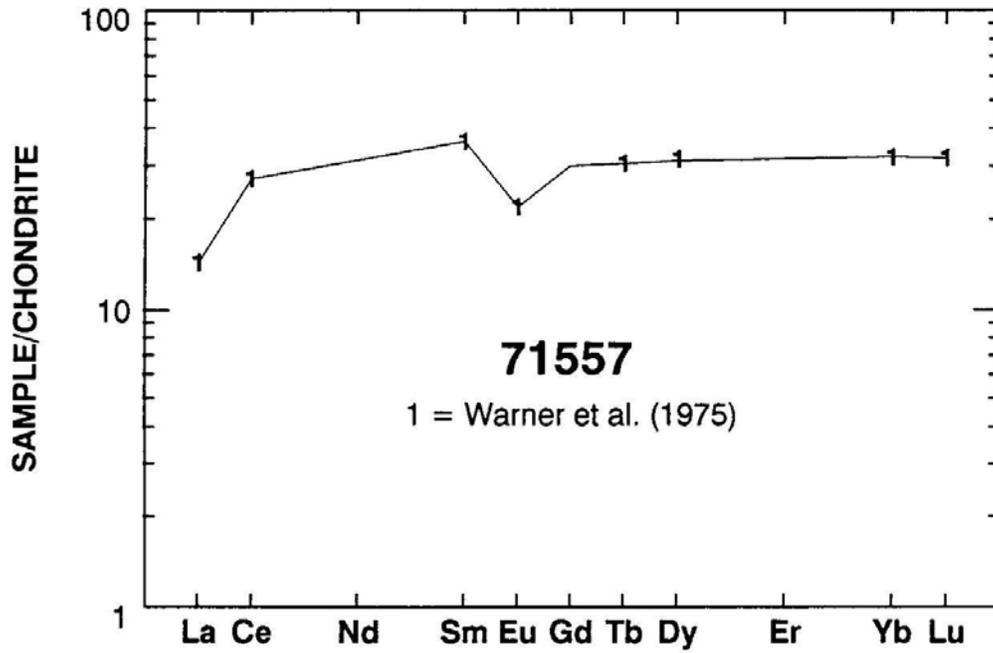


Figure 2: Chondrite-normalized rare-earth element plot of 71557. Data from Warner et al. (1975.)

the analysis of Dy by INA may be responsible for this. The HREE have a generally flat profile at 30-35 times chondrite levels. A negative Eu anomaly is present ($(Eu/Eu^*)_N = 0.66$].

PROCESSING

Of the original 40.35 g of 71557,0, a total of 38.98 remains. 71557,1 was split into

,9001 for INAA and,6 for a thin section.