

67775
KREEP Breccia
 6.6 grams



Figure 1: Photo of 67775. Sample is 1 cm wide. S72-51259

Table 1. Chemical composition of 67775

| reference weight | Stoffler85 | | Borchardt | | Reimold85 |
|--------------------------------|------------|------|-----------|-------|-----------|
| SiO ₂ % | 46.4 | 45.4 | (a) | 44.9 | |
| TiO ₂ | 0.37 | 0.95 | (a) | 0.4 | |
| Al ₂ O ₃ | 23.2 | 20.2 | (a) | 24.1 | |
| FeO | 5.2 | 8.3 | (a) | 5.1 | |
| MnO | 0.06 | 0.08 | (a) | 0.06 | |
| MgO | 8.8 | 12.7 | (a) | 8.1 | |
| CaO | 15.1 | 11.4 | (a) | 14.4 | |
| Na ₂ O | 0.48 | 0.5 | (a) | 0.5 | |
| K ₂ O | 0.32 | 0.2 | (a) | 0.3 | |
| P ₂ O ₅ | 0.1 | 0.16 | (a) | 0.13 | |
| S % | | | | | |
| Sc ppm | 13.5 | | (b) | | |
| Co | 63.5 | | (b) | | |
| Ni | 900 | | (b) | | |
| Rb | | | | 3.08 | (c) |
| Sr | | | | 152 | (c) |
| Ba | 252 | | (b) | | |
| Nd | | | | 39.46 | (c) |
| Sm | 13.8 | | (b) | 11.14 | (c) |
| Yb | 8.24 | | (b) | | |

technique : (a) DBA, (b) INAA, (c) IDMS

Introduction

67766 is a rake sample collected from the rim of North Ray Crater – see section on 67701. It has a KREEP-like rare-earth-element pattern, so it must be from Imbrium. It has micrometeorite craters (figure 1).

Petrography

Reimold et al. (1985) noted that 67775 was rather unique among Apollo 16 samples in being the only sample with intergranular texture and containing a high amount of mafic mineral clasts (figure 2). Indeed it has fewer clasts of plagioclase-rich lithic fragments and a low Al₂O₃ content than other rake samples.

Mineralogical Mode 67775

| | Reimold et al. 1985 |
|-------------|---------------------|
| Plagioclase | 53.6 % |
| Pyroxene | 42.3 |
| Olivine | 1.1 |
| Opaque | ~3 |
| Mesostasis | - |

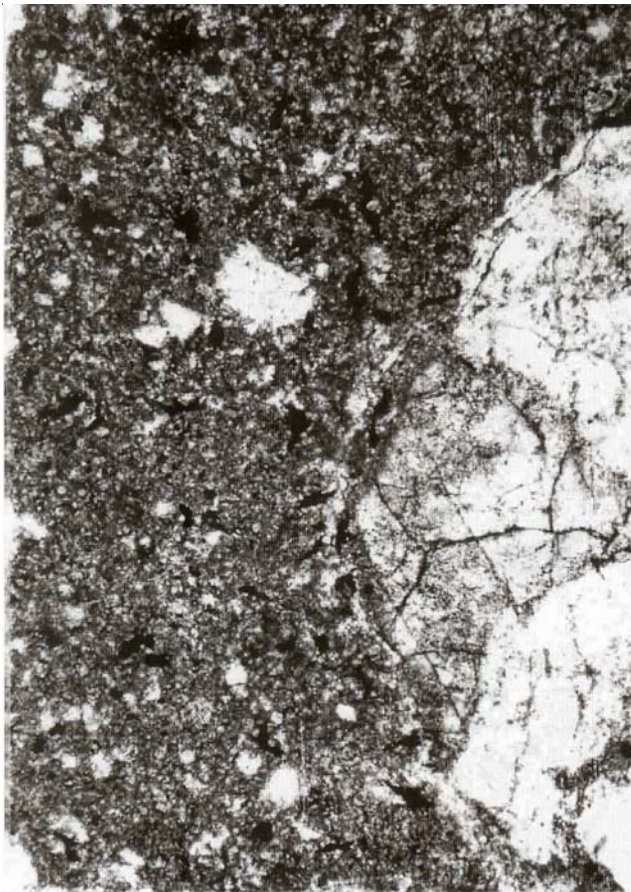


Figure 2: Thin section photomicrograph of 67775.

Steele and Smith (1973) had earlier determined that the mafic minerals in 67775 were typical of KREEP materials (figure 3).

Chemistry

Stoffler et al. (1985) analyzed two thin sections for major elements finding high Mg/Fe ratio. They also determined the rare-earth-element content (figure 4).

Radiogenic age dating

Reimold et al. (1985) reported whole rock data, but no age.

Processing

There are two thin section, but not a lot of rock sample

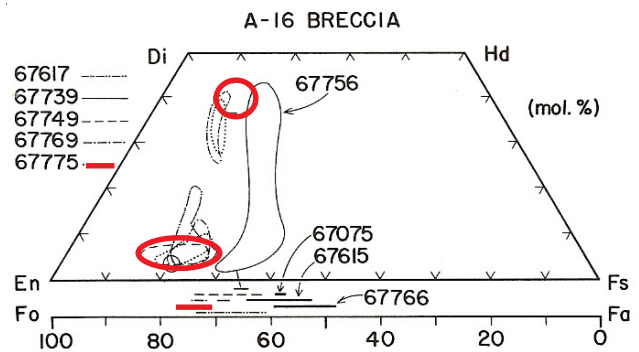
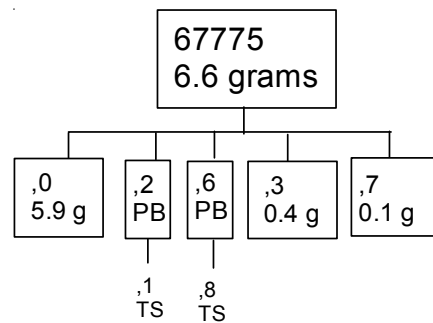


Figure 3: Pyroxene and olivine composition in Apollo 16 rake samples from North Ray Crater (Steele and Smith 1973).



References for 67775

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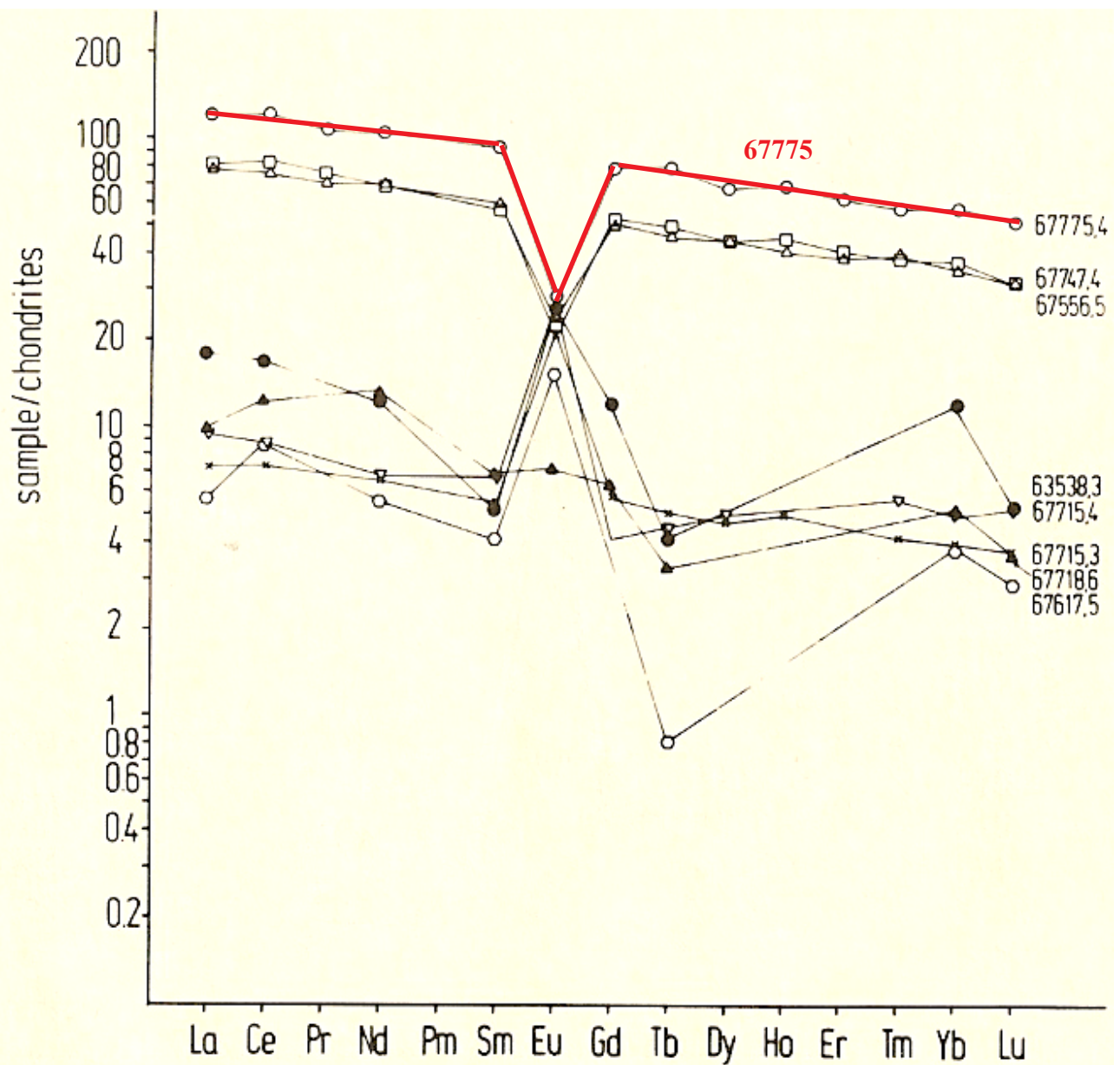


Figure 4: Normalized rare-earth-element diagram for 67775 (Stoffler et al. 1985).

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