78585
Vitrophryic Basalt
44.6 grams

Figure 1: Photo of 78585. Cube is 1 cm. S73-21395.

Introduction
78585 is from the rake sample collected as part of a large comprehensive sample at station 8, Apollo 17 (figure 2). It is an aphanitic basalt.

Petrography
78585 has an opaque matrix with about 10% skeletal olivine and 20-30% thin skeletal opaques (ilmenite or armalcolite) set in black glass (figure 3). There are no mineral analyses reported.

Chemistry
Ma et al. (1977) and Warner et al. (1979) first reported the chemical composition of 78585 – later confirmed by analyses by Neal (2001). It is a type B basalt (figure 5).

Radiogenic age dating
Apollo 17 mare basalts are generally considered 3.72 ± 0.04 b.y. old (see Paces et al. 1991).

Processing
78585 has been split (figure 7). There are 3 thin sections.

Figure 2: Location where 78585 was found.

References for 78585


LSPET (1973) Apollo 17 lunar samples: Chemical and petrographic description. Science 182, 659-672.

Figure 3: Photomicrographs in transmitted and reflected light of thin section 78585.4, 2.8 mm across
Table 1. Chemical composition of 78585.

<table>
<thead>
<tr>
<th>element</th>
<th>78585</th>
<th>A11</th>
<th>A17</th>
<th>A12</th>
<th>A15</th>
</tr>
</thead>
<tbody>
<tr>
<td>TiO2 %</td>
<td>12.2 (a)</td>
<td>10.5 (b)</td>
<td>7.0 (b)</td>
<td>9.0 (b)</td>
<td>8.0 (b)</td>
</tr>
<tr>
<td>Al2O3 %</td>
<td>14.1 (a)</td>
<td>13.5 (b)</td>
<td>13.0 (b)</td>
<td>13.0 (b)</td>
<td>13.0 (b)</td>
</tr>
<tr>
<td>FeO %</td>
<td>19.6 (a)</td>
<td>17.0 (b)</td>
<td>17.0 (b)</td>
<td>17.0 (b)</td>
<td>17.0 (b)</td>
</tr>
<tr>
<td>MnO %</td>
<td>0.245 (a)</td>
<td>0.21 (b)</td>
<td>0.21 (b)</td>
<td>0.21 (b)</td>
<td>0.21 (b)</td>
</tr>
<tr>
<td>MgO %</td>
<td>7.0 (a)</td>
<td>6.5 (b)</td>
<td>6.5 (b)</td>
<td>6.5 (b)</td>
<td>6.5 (b)</td>
</tr>
<tr>
<td>CaO %</td>
<td>11.0 (a)</td>
<td>10.0 (b)</td>
<td>10.0 (b)</td>
<td>10.0 (b)</td>
<td>10.0 (b)</td>
</tr>
<tr>
<td>Na2O %</td>
<td>0.396 (a)</td>
<td>0.36 (b)</td>
<td>0.36 (b)</td>
<td>0.36 (b)</td>
<td>0.36 (b)</td>
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<tr>
<td>K2O %</td>
<td>0.041 (a)</td>
<td>0.035 (b)</td>
<td>0.035 (b)</td>
<td>0.035 (b)</td>
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</tr>
<tr>
<td>P2O5 %</td>
<td>4.0 (a)</td>
<td>3.5 (b)</td>
<td>3.5 (b)</td>
<td>3.5 (b)</td>
<td>3.5 (b)</td>
</tr>
<tr>
<td>S %</td>
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<td>0.001 (b)</td>
<td>0.001 (b)</td>
<td>0.001 (b)</td>
<td>0.001 (b)</td>
</tr>
</tbody>
</table>

**Figure 4:** Composition of lunar basalts.

**Figure 5:** 78585 is a type B basalt!

**Figure 6:** Normalized rare-earth-element diagram for 78585 compared with A and B types of Apollo 17 basalt.

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Lunar Sample Compendium
C Meyer 2011

*technique (a) INAA, (b) ICP-MS*
Figure 7: Processing photo of 78585. Cube is 1 cm. S82-27854


