**76136**

**High-Ti Mare Basalt**

86.6 g, 6 x 4 x 3 cm

**INTRODUCTION**

The top of this rock is covered with many large (~0.5 mm) micro-meteorite pits lined with grey glass (Fig. 1). Several large crystal-lined cavities occur in this basalt. This rock is a typical Apollo 17 basalt fragment.

**PETROGRAPHY**

Sample 76136 consists of large, randomly-oriented ilmenite plates in a fine-grained holocrystalline matrix with ~6% equant olivine rimmed by blocky pyroxene. The pyroxene-plagioclase matrix varies from crudely variolitic (or sheath-like) to intersertal in texture (Fig. 2).

Brown et al. (1975) report the mineral mode of 76136 to be 15% plagioclase, 46% clinopyroxene, 6% olivine, 31% opaques, and 1.5% silica.

**WHOLE-ROCK CHEMISTRY**

Rhodes et al. (1976a) define three self-consistent basalt types at Apollo 17 on the basis of fine-grained, rapidly chilled samples. The chemical variation within each group is attributed to moderate amounts (5-20%) of crystal fractionation dominated by removal of olivine, armalcolite/ilmenite, and chrome spinel. Table 1 gives the composition, and Fig. 3 compares the REE content of 76136 with the soil and the boulder.

**RADIOGENIC ISOTOPES**

Nyquist et al. (1976) report whole-rock Rb-Sr data (Table 2).

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Figure 1: Micrometeorite craters on surface of 76136, ilmenite basalt. S73-23931.
Figure 2: Photomicrograph of texture of 76136 basalt. Field of view is 4 x 5 mm.

Figure 3: Normalized rare earth element composition of 76136 compared with soil and boulder at Station 6.
Table 1: Whole-rock chemistry of 76136.
From Rhodes et al. (1976a).

<table>
<thead>
<tr>
<th>Split Technique</th>
<th>$\delta$ XRF, ID, INAA</th>
<th>Split Technique</th>
<th>$\delta$ XRF, ID, INAA</th>
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<tbody>
<tr>
<td>SiO$_2$ (wt%)</td>
<td>38.60</td>
<td>Li</td>
<td>8.9</td>
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<tr>
<td>TiO$_2$</td>
<td>12.64</td>
<td>Ba</td>
<td>83.7</td>
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<tr>
<td>Al$_2$O$_3$</td>
<td>8.65</td>
<td>Ni</td>
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<tr>
<td>Cr$_2$O$_3$</td>
<td>0.44</td>
<td>Co</td>
<td>18.7</td>
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<tr>
<td>FeO</td>
<td>19.12</td>
<td>Sc</td>
<td>82</td>
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<tr>
<td>MnO</td>
<td>0.28</td>
<td>La</td>
<td>6.91</td>
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<tr>
<td>MgO</td>
<td>8.61</td>
<td>Ce</td>
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<td>CaO</td>
<td>10.53</td>
<td>Nd</td>
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<tr>
<td>Na$_2$O</td>
<td>0.38</td>
<td>Sm</td>
<td>10.9</td>
</tr>
<tr>
<td>K$_2$O</td>
<td>0.06</td>
<td>Eu</td>
<td>2.14</td>
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<tr>
<td>P$_2$O$_5$</td>
<td>0.06</td>
<td>Gd</td>
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</tr>
<tr>
<td>S</td>
<td>0.18</td>
<td>Tb</td>
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</tr>
<tr>
<td>Nb (ppm)</td>
<td></td>
<td>Dy</td>
<td>19.3</td>
</tr>
<tr>
<td>Zr</td>
<td></td>
<td>Er</td>
<td>11.4</td>
</tr>
<tr>
<td>Hf</td>
<td>9.4</td>
<td>Yb</td>
<td>10.2</td>
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<tr>
<td>Sr</td>
<td>190</td>
<td>Lu</td>
<td>1.42</td>
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<tr>
<td>Rb</td>
<td>0.67</td>
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Table 2: Rb-Sr composition of 76136.
Data from Nyquist et al. (1976).

<table>
<thead>
<tr>
<th>Sample</th>
<th>76136,8</th>
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<tbody>
<tr>
<td>wt (mg)</td>
<td>60</td>
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<tr>
<td>Rb (ppm)</td>
<td>0.665</td>
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<tr>
<td>Sr (ppm)</td>
<td>190</td>
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<tr>
<td>$^{87}$Rb/$^{86}$Sr</td>
<td>0.0101±2</td>
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<tr>
<td>$^{87}$Sr/$^{86}$Sr</td>
<td>0.69974±4</td>
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<td>$T_B$</td>
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<td>$T_L$</td>
<td>4.89±0.36</td>
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B = Model age assuming $I = 0.69910$ (BABI + JSC bias)
L = Model age assuming $I = 0.69903$
(Apollo 16 anorthosites for $T = 4.6$ b.y.)