66081
Soil
301 grams

Figure 1: Photo of astronaut getting ready to collect soil sample 66081.
AS16-108-17629.

Figures 2 and 3: Maps of Apollo 16 site and station 6.
Introduction
66081 was collected from a small subdued crater on the Cayley Plain near Stone Mountain (figures 1-3). The location is across from the area where 66031, 41 were collected and they have about the same properties.

Petrography
The maturity index for 66081 is $I_{s}/FeO = 80$ and average grain size = 67 microns (figure 7).

Chemistry
Compston et al. (1973), Rose et al. (1973), Laul et al. (1973) and other have analyzed 66081 (table 1 and figures 4 and 6). Finkelman et al. (1975) analyzed the fine fraction. Korotev (1982) showed all the analyses from station 6 were similar.

The meteoritic siderophile content is high, but the very high Ni reported is probably form the sieves.

Moore et al. (1973) determined 170 ppm carbon for 66081 (figure 5). Kerridge et al. (1975) determined 169 ppm carbon and 110 ppm nitrogen. This is a very mature soil sample.

Cosmogenic isotopes and exposure ages
Clark and Keith (1973) determined the cosmic-ray-induced activity of $^{26}$Al = 102 dpm/kg and $^{22}$Na = 44 dpm/kg. Walton et al. (1973) determined a Ne exposure age of 230 m.y.

Mineralogical Mode
From Butler 74-53 microns
Olivine 1.4 %
Pyroxene 1.4
Plagioclase 9.7
Glass 4.3
Rock fragments 28
Welded fragments 55

Other Studies
Walton et al. (1973) determined the rare gas content and isotopic ratios for 66081.

Nunes (19750 studied the Pb isotopes.
Table 1. Chemical composition of 66081.

<table>
<thead>
<tr>
<th>reference weight</th>
<th>LSPET72</th>
<th>Compston73</th>
<th>Clark73</th>
<th>Baedecker72</th>
<th>Rose73</th>
<th>Laul73</th>
<th>Laul73b</th>
<th>Finkelman75</th>
<th>Boynton75</th>
<th>Korotev81</th>
<th>ave. st. 6</th>
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</thead>
<tbody>
<tr>
<td>SiO2 %</td>
<td>45.38</td>
<td>(a)</td>
<td>44.56</td>
<td>(a)</td>
<td>45</td>
<td>(d)</td>
<td>0.75</td>
<td>0.7</td>
<td>(e)</td>
<td>6.17</td>
<td>5.95</td>
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<tr>
<td>TiO2</td>
<td>0.67</td>
<td>(a)</td>
<td>0.67</td>
<td>(a)</td>
<td>0.66</td>
<td>(d)</td>
<td>0.75</td>
<td>0.7</td>
<td>(e)</td>
<td>6.17</td>
<td>5.95</td>
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<tr>
<td>Al2O3</td>
<td>26.22</td>
<td>(a)</td>
<td>25.8</td>
<td>(a)</td>
<td>26</td>
<td>(d)</td>
<td>26.6</td>
<td>26.6</td>
<td>(e)</td>
<td>6.08</td>
<td>0.077</td>
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<tr>
<td>FeO</td>
<td>5.85</td>
<td>(a)</td>
<td>5.97</td>
<td>(a)</td>
<td>6.15</td>
<td>(d)</td>
<td>6.5</td>
<td>6.5</td>
<td>(e)</td>
<td>6.17</td>
<td>5.95</td>
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<td>MnO</td>
<td>0.08</td>
<td>(a)</td>
<td>0.08</td>
<td>(a)</td>
<td>0.08</td>
<td>(d)</td>
<td>0.073</td>
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<td>(e)</td>
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<td>MgO</td>
<td>6.39</td>
<td>(a)</td>
<td>6.44</td>
<td>(a)</td>
<td>6.36</td>
<td>(d)</td>
<td>6</td>
<td>6</td>
<td>(e)</td>
<td>6.25</td>
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<td>CaO</td>
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<td>(a)</td>
<td>15.26</td>
<td>(a)</td>
<td>15</td>
<td>(d)</td>
<td>17</td>
<td>15.3</td>
<td>(e)</td>
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<td>Na2O</td>
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<td>(a)</td>
<td>0.45</td>
<td>(a)</td>
<td>0.39</td>
<td>(d)</td>
<td>0.446</td>
<td>0.446</td>
<td>(e)</td>
<td>0.5</td>
<td>0.44</td>
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<td>K2O</td>
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<td>(a)</td>
<td>0.13</td>
<td>(a)</td>
<td>0.13</td>
<td>(b)</td>
<td>0.11</td>
<td>0.11</td>
<td>(e)</td>
<td>0.12</td>
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<td>P2O5</td>
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<td>(a)</td>
<td>0.15</td>
<td>(d)</td>
<td>0.11</td>
<td>0.11</td>
<td>(e)</td>
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<td>S %</td>
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<td>0.06</td>
<td>(a)</td>
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<td>(d)</td>
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<td>0.11</td>
<td>(e)</td>
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<td>0.12</td>
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<tr>
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</table>

Sc ppm 10 (d) 11 11 (e) 9 14 (f) 10.8 (e) 10.4 (f) 24
V 19 (d) 25 25 (e) 16 38 (f) 790 (e) 795 (f) 33.5
Cr 830 (a) 890 (d) 182 182 (e) 790 (e) 795 (f) 33.5
Co 22 22 (d) 42 36 (e) 330 920 (f) 460
Ni 342 (a) 705 623 (c) 335 380 (f) 460
Cu 9.5 (d) 7 15 (f) 4
Zn 23 22 (c) 21 (d) 12 27 (f) 4
Ga 5.4 5.1 (c) 3 4 (f) 4
Ge ppb 1650 1160 (c)
As
Se
Rb 3.1 (a) 3.01 (g) 3 2 (f) 3
Sr 170 (a) 165 (g) 145 (d) 150 150 (f) 163
Y 48 (a) 39 (d) 40 71 (f) 44
Zr 205 (a) 125 (d) 110 220 (f) 162
Nb 13 (a)
Mo
Ru
Rh
Pd ppb
Ag ppb
Cd ppb 78 78 (c)
In ppb 15 15 (c)
Sn ppb
Sb ppb
Te ppb
Cs ppm
Ba 130 (d) 130 120 140 (f) 150 (e) 142
La 14.7 14.7 (e) 14 (e) 13.7 (e)
Ce 37 37 (e) 39 (e)
Pr
Nd
Sm 7.1 7.1 (e) 7.7 (e) 6.95 (e)
Eu 1.23 1.23 (e) 1.35 (e) 1.27 (e)
Gd
Tb
Tb 1.3 1.3 (e) 1.3 (e) 1.32 (e)
Dy 8.4 8.4 (e) 10.1 (e)
Ho
Er
Tm
Yb 5 5 (e) 4.9 (e) 4.65 (e)
Lu 0.77 0.77 (e) 0.83 (e) 0.73 (e)
Hf 4.5 4.5 (e) 5.3 (e) 4.7 (e)
Ta 0.64 0.64 (e) 0.58 (e) 0.6 (e)
W ppb
Re ppb
Os ppb
Ir ppb 24 19 (c)
Pt ppb
Au ppb 11.9 9.3 (c)
Th ppm 3.2 (a) 2.3 (b) 2.1 2.1 (e) 2.7 (e) 2.4 (e)
U ppm 0.7 (b) 0.6 0.6 (e) 0.67 (e)
technique: (a) XRF, (b) radiation count., (c) RNAA, (d) 'microchem.', (e) INAA, (f) OES, (g) IDMS
Figure 6: Normalized rare-earth-element diagram for 66081.

Figure 7: Grain size distribution for 66080 (Graf 1993, from data by Butler et al.)

average grain size = 67 microns

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66080 - 3.7 g
66085 - 2 g
66086 - 2 g

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same bag

66080 301 grams

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C Meyer 2010

Lunar Sample Compendium
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References for 66081.


Marvin U.B. (1972) Apollo 16 coarse fines (4-10 mm): Sample classification, description and inventory. JSC Catalog.


