

**10026** – 9.3 grams

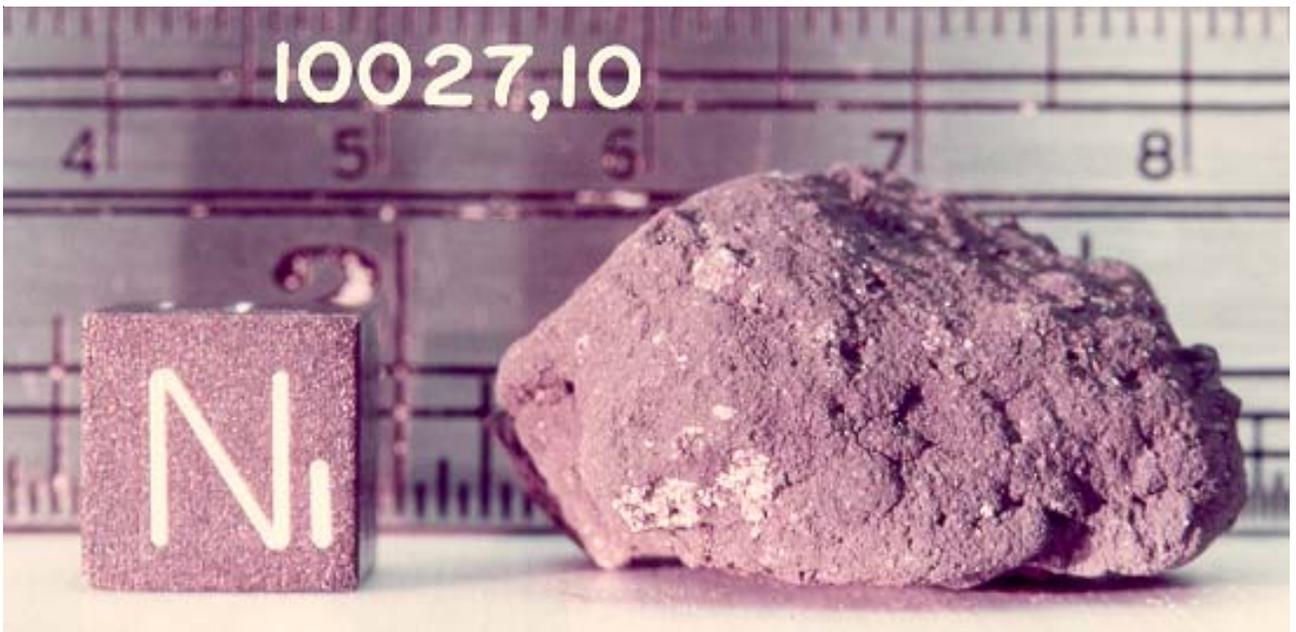
**10027** – 8.9 grams

**10028** – 3.5 grams

Regolith Breccia



*Figure 1: Photo of 10026,10. Cube is 1 cm. NASA S75-32596.*



*Figure 2: NASA S75-32188 Cube is 1 cm.*



Figure 3: Photo of 10028. NASA S69-46041. Sample is 4 cm.

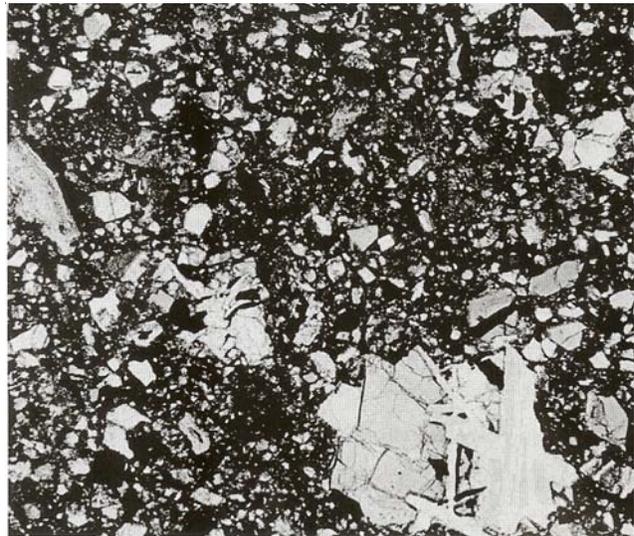


Figure 4: Photomicrograph of thin section of 10026. Field of view is 1.2 mm. S76-26860

### **Introduction**

10026, 10027 and 10028 were collected as part of the contingency sample from the area immediately in front of the Lunar Module (LM). They are similar to 10023 – 10025 from the same collection area, as well as the other Apollo 11 regolith breccias.

### **Petrography**

Engelhardt et al. (1971) give a modal analysis of 10027. There is an abundance of basalt clasts.

Kramer et al. (1977) noted that 10028 may have a different clast assemblage. Fruland (1983) and Simon et al. (1984) discuss Apollo 11 regolith breccias in general. Phinney et al. (1974) showed how to characterize these rocks by SEM petrography (but did not include these samples).

### **Chemistry**

none

### **Other Studies**

Funkhouser et al. (1970) determined rare gases in 10027 (figure 6).

### **Processing**

Apollo 11 samples were originally described and cataloged in 1969 and “recataloged” by Kramer et al. (1977). 10026, 10027 and 10028 were returned in the Contingency Sample Bag. There are 2 thin sections of 10026, 5 for 10027 and only 1 for 10028.

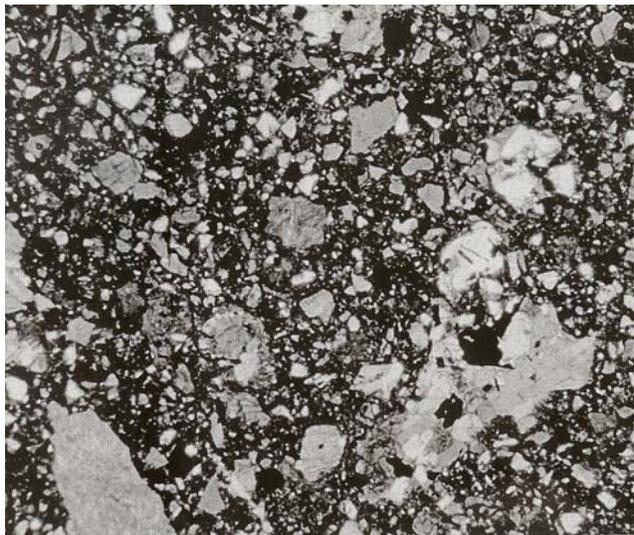


Figure 5: Photomicrograph of thin section of 10027. Field of view is 1.2 mm. S76-26306.

#### **Mode for 10027 (Engelhardt et al. 1971)**

Matrix	50 %
Without matrix	
Basalt	24 %
Anor.	2
Glass	26
Mafic min.	24
Plag.	13
Opaques	8

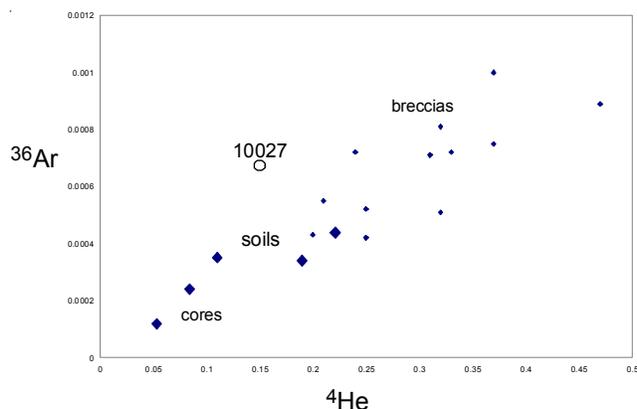


Figure 6: Implanted solar wind in 10027 compared with Apollo 11 soils and breccias (Funkhouser et al. 1070 and Hintenberger et al. 1976). Units STP cc/g.

### References for 10026, 10027 and 10028

von Engelhardt W., Arndt J., Muller W.F. and Stoffler D. (1970) Shock metamorphism of lunar rocks and origin of the regolith at the Apollo 11 landing site. *Proc. Apollo 11 Lunar Sci. Conf.* 363-384.

von Engelhardt W., Arndt J., Muller W.F. and Stoffler D. (1971) Shock metamorphism and origin of regolith and breccias at the Apollo 11 and Apollo 12 landing sites. *Proc. Second Lunar Sci. Conf.* 833-854.

Funkhouser J.G., Jessberger E., Muller O. and Zahringer J. (1971) Active and inert gases in Apollo 12 and 11 samples released by crushing at room temperature and heating at low temperature. *Proc. 2<sup>nd</sup> Lunar Sci. Conf.* 1381-1396.

Fruland Ruth M. (1983) Regolith Breccia Workbook. Curatorial Branch Publication # 66. JSC 19045.

King E.A. and a cast of thousands (1969) Lunar Sample Information Catalog, Apollo 11. Lunar Receiving Laboratory, MSC 412 pp

Kramer F.E., Twedell D.B. and Walton W.J.A. (1977) **Apollo 11 Lunar Sample Information Catalogue** (revised). Curator's Office, JSC 12522

Lofgren G.E. (1971b) Devitrified glass fragments from Apollo 11 and Apollo 12 lunar samples. *Proc. 2<sup>nd</sup> Lunar Sci. Conf.* 949-955

LSPET (1969) Preliminary examination of lunar samples from Apollo 11. *Science* **165**, 1211-1227.

Phinney W.C., McKay D.S., Simonds C.H. and Warner J.L. (1976a) Lithification of vitric- and elastic-matrix breccias: SEM photography. *Proc. 7<sup>th</sup> Lunar Sci. Conf.* 2469-2492.

Simon S.B., Papike J.J., Shearer C.K. and Laul J.C. (1983) Petrology of the Apollo 11 highland component. *Proc. 14<sup>th</sup> Lunar Planet. Sci. Conf. in J. Geophys. Res.* **88**, B103-138.

Simon S.B., Papike J.J. and Shearer C.K. (1984) Petrology of Apollo 11 regolith breccias. *Proc. 15<sup>th</sup> Lunar Planet. Sci. Conf. in J. Geophys. Res.* **89**, C109-132.

