

15613      MEDIUM-GRAINED OLIVINE-NORMATIVE      ST. 9A      1.00 g  
MARE BASALT

INTRODUCTION: 15613 is a medium-grained olivine-bearing mare basalt which is vesicular (Fig. 1). A few olivines form phenocrysts. It is tough with porphyritic olivine macroscopically visible. 15613 was collected as part of the rake sample at Station 9A.

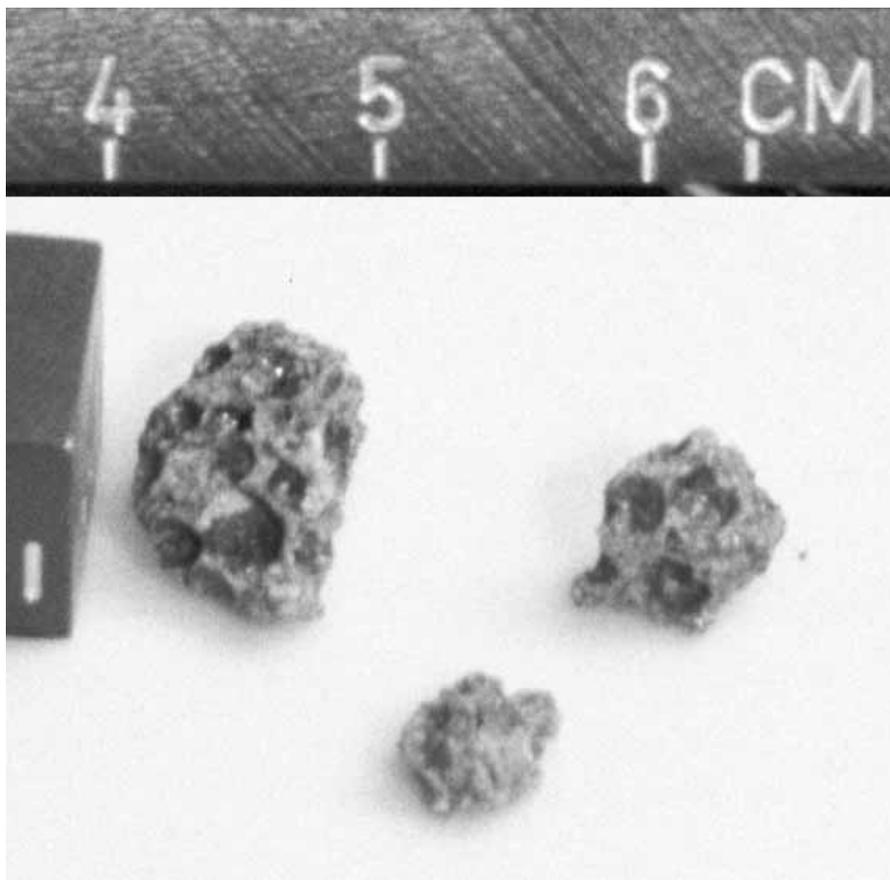


Figure 1. Post-chip view of 15613. Medium-sized chip is ,1. S-71-56158

PETROLOGY: 15613 is a medium-to fine-grained olivine-bearing mare basalt (Fig. 2) with olivines largely phenocrystic. Most pyroxenes are small, but a few are up to 2 mm long. The plagioclases form lathy to stubby hollow crystals which in places form a radiate structure. Dowty et al. (1973a,b) described 15613 as a vesicular olivine microgabbro with small olivines and some variolitic-fasciculate intergrowths of feldspar and pyroxene. They reported a mode of 55% pyroxene, 29% plagioclase, 10% olivine, 4% opaques, 0.6% silica phase (actually cristobalite) and 1.4% miscellaneous. Microprobe analyses of pyroxene, olivine, plagioclase, Si-K glass, and Fe-metal were

tabulated by Dowty et al. (1973c), and spinel group and ilmenite analyses were tabulated by Nehru et al. (1973). The latter were included in the discussion but no data specified in Nehru et al. (1974). The metal grains contain 1.5 to 2.4% Co and 6.7 to 8.5% Ni, although one grain had 1.0% Co and 1.9% Ni. Ilmenite contains 0.3 to 1.95% MgO. The mineral compositions (Fig. 3) are typical of Apollo 15 olivine-normative mare basalts.



**Fig. 2a**



**Fig. 2b**

Figure 2. Photomicrographs of 15613,2. Widths about 3 mm.  
a) transmitted light; b) crossed polarizers.

**CHEMISTRY:** The only bulk analysis is the microprobe defocussed-beam analysis of Dowty et al. (1973a,b) (Table 1). The analysis shows a fairly average Apollo 15 olivine-normative mare basalt.

**PROCESSING AND SUBDIVISIONS:** Chipping produced two small pieces, the smallest of which remains as part of ,0 (now 0.80 g). The other, ,1 was partly consumed in producing thin sections ,2 and ,3.

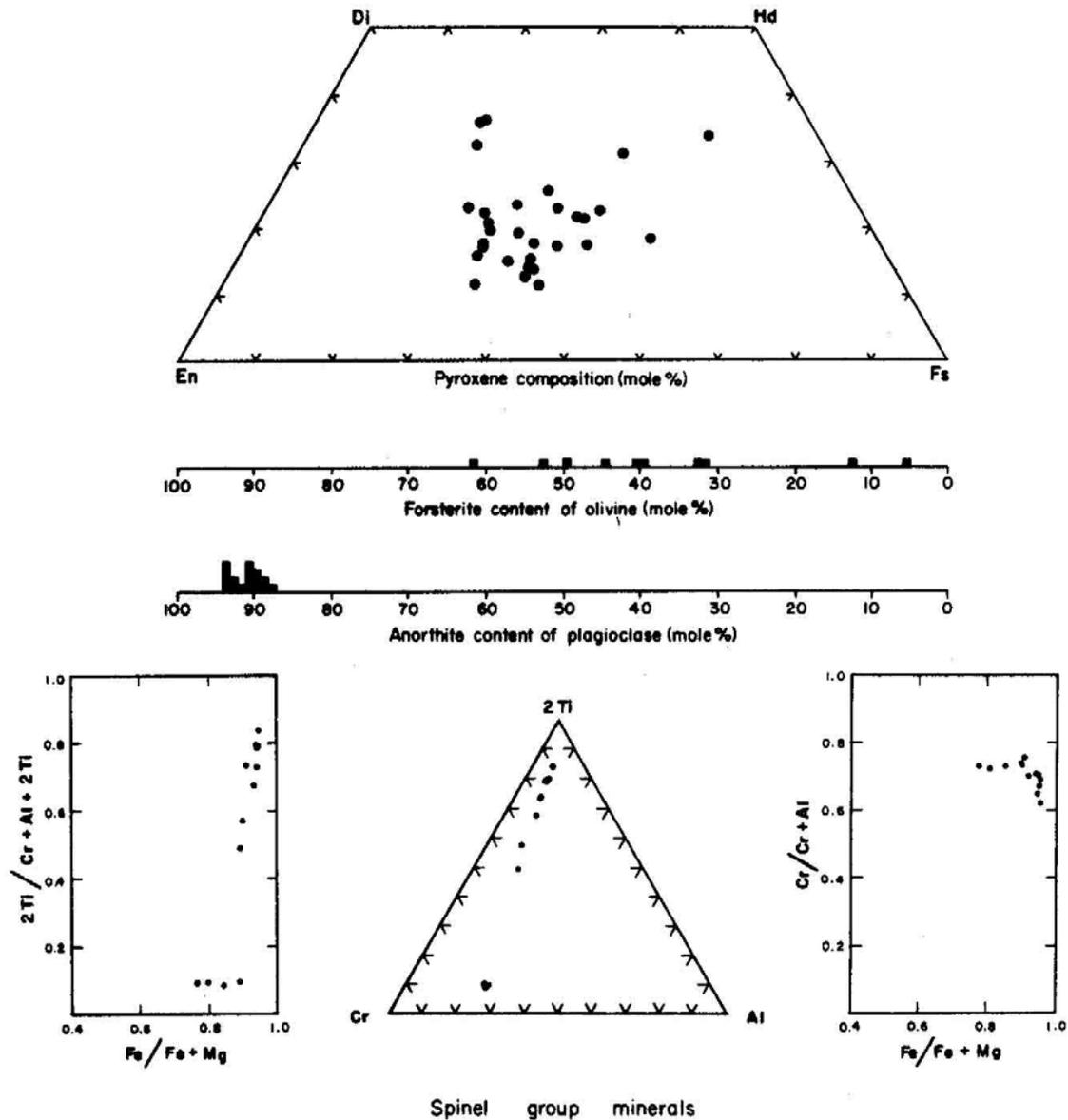


Figure 3. Chemistry of minerals in 15613 (Dowty et al., 1973b).

TABLE 15613-1. Defocussed beam bulk analysis  
(Dowty et al., 1973a, b)

Wt %	SiO <sub>2</sub>	44.1
	TiO <sub>2</sub>	2.66
	Al <sub>2</sub> O <sub>3</sub>	9.2
	FeO	22.9
	MgO	10.4
	CaO	9.4
	Na <sub>2</sub> O	0.34
	K <sub>2</sub> O	0.04
	P <sub>2</sub> O <sub>5</sub>	0.06
ppm	Cr	3015
	Mn	1860