**Introduction:** Sample 60639 is a 175.1 g rake sample collected near the Apollo 16 lunar module. It is a polymict fragmental breccia containing a variety of lithic clasts, including mare basalt, anorthosite, and a variety of impact-melt breccias (poikilitic, aphanitic, and glassy) [1]. A basalt clast from 60639 was examined by [2], who described the fragment as being chemically similar to subophitic textured Luna 16 basalts. A subsequent study [3] suggested that the major- and trace-element concentrations in the 60639 basalt clast indicated that it is similar to low alkali Apollo 11 and 17 high-Ti basalts. The basalt fragment 60639,2 (Fig. 1) is a coarse-grained mare basalt [4] with plagioclase laths ~300-500 microns in length [1] and is composed of approximately 5% olivine, 35% plagioclase, 5-10% ilmenite, and 50% pyroxene and accessory spinel [4].

The main objective of this study is to characterize newly discovered basalt clasts from 60639, as well as re-examine the previously studied 60639 basalt clast [3,4], with modern analytical methods. New mineral and whole-rock data augment the sparse petrographic dataset for basalts from the Apollo 16 landing site. We examine the previously studied thin-section 60639,2 [2] as well as two new thin-sections (Table 1) from basalt fragments we discovered in 2010. The additional thin-sections (.50 & .52) are petrographically similar to .2. In addition to the thin-sections, the whole-rock (WR) composition of 5 basalt chips as well as 2 breccia and 3 breccia-basalt mix fragments from 60639 (Table 1) were analyzed. WR split 60639,4 is the same sample reported by [3].

**Results:** Laser ablation work is scheduled on the three thin-sections from 60639. Preliminary results show that plagioclase...
grains from different thin-sections have similar major element compositions (Fig. 2a). Plagioclase grains from the breccia portions have higher An% and a wider spread in their Mg# than their basaltic counterparts; the average An% in breccia plagioclases (97.9%) is similar to the average An% of impact melt plagioclases from Apollo 16 (97.2%). Pyroxene grains are predominately augite (Fig. 2b) in composition with some crystals zoning to an Fe-rich pigeonite rim; some pyroxenes from ,50 and ,52 are enstatitic. Average composition of olivine grains from the basalt is 66.8% Fo and 70.4% Fo from the breccia (Fig. 2c).

**Whole-Rock Analyses:** Preliminary results indicate that basalts from 60639 are similar in major-element composition to Apollo 11 basalts (Fig. 3), which is consistent with the findings of [3]; the combination of chemical composition and textural data is largely distinct from other previously analyzed Apollo 16 basalts [6] indicating that basalts from the Apollo 16 site likely represent ejecta from several localities. Although major element data is similar to Apollo 11 high-Ti basalts, 60639 does not fall easily within any of the defined high-Ti basalt groups (Fig. 4) described by [7], but appears to bridge the gap between group A and the group B basalts.

**Fig. 3.** WR major element data for mare basalts suggests that the 60639 basalt clasts are similar to Apollo 11 high-Ti basalts; figure modified from [6].

**Fig. 4.** Whole rock data of 60639 basalt clasts from this study in comparison with Apollo 11 high-Ti basalt groups suggesting that is the 60639 basalts are distinct from the Apollo 11 basalts; figure modified from [7].

**Preliminary Conclusions:** Mineral compositions for the different thin-sections are similar to each other, with the exception of pyroxene where 60639,2 does not appear to contain any enstatite. This suggests that the three basalt clasts were likely ejected from the same locality. Whole rock data indicate that although there are similarities with Apollo 11 high-Ti basalts, the 60639 basalt clasts represent a new type of high-Ti basalt.

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