63525 – 6.68 grams
63526 – 2.9 grams
63528 – 4.1 grams
63555 – 3.4 grams
Impact Melt Breccia

Figure 1: Photo of 63525. Scale in mm. S80-37425

Figure 2: Photo of 63526. Scale in mm. S80-37427

Figure 3: Photo of 63528. 25 mm long. S80-37424

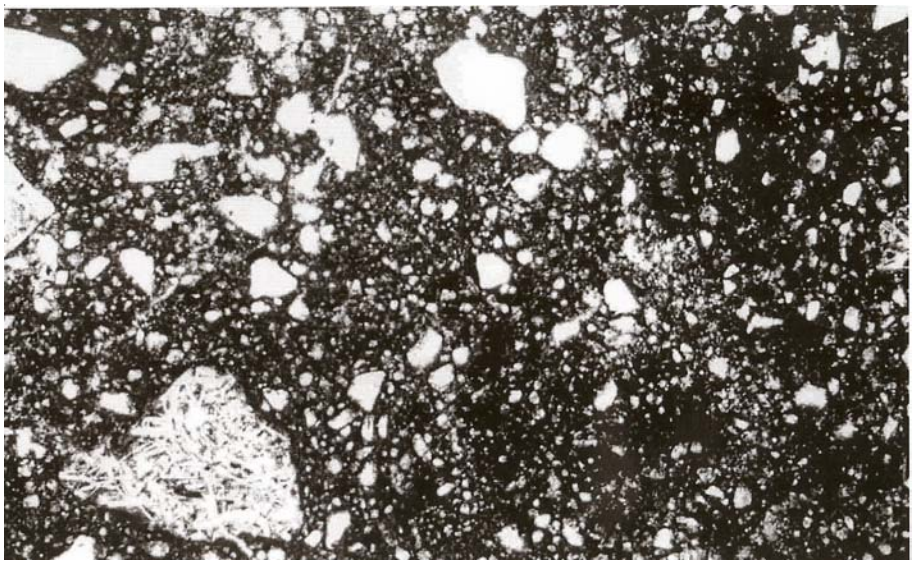


Figure 2: Photomicrograph of thin section 63525,11 showing seriate grain size distribution and various clast types. (from Ryder and Norman 1980). Field of view is 3 mm.

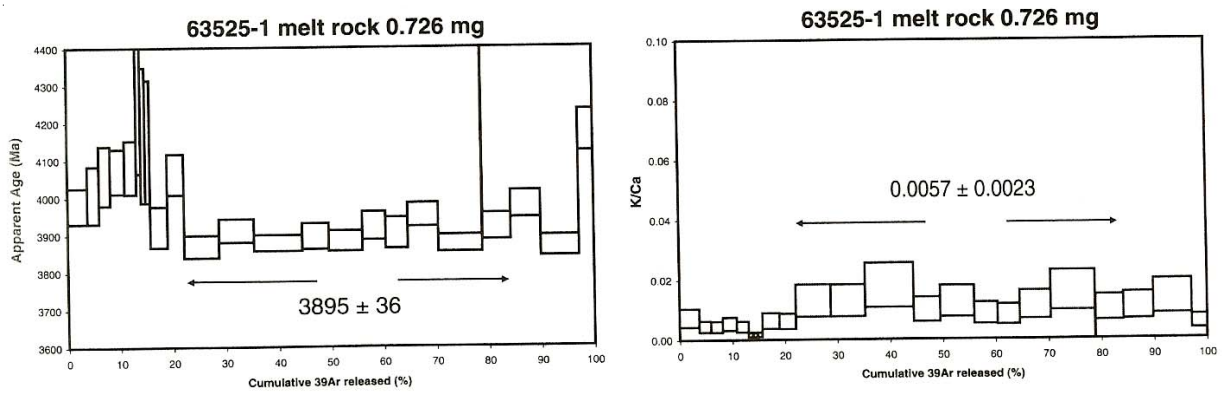


Figure 3: Ar/Ar plateau diagram for 63525 (Norman et al. 2006).

Introduction

63525, 63526, 63528 and 63555 are small rake samples taken from the surface near Shadow Rock – see section on 63501. These samples are impact melt breccia, probably dug up by North Ray Crater.

Petrography

Phinney et al. (1976) describe these samples together as "tough crystalline breccia". Based on examination by SEM, they noted that glass was missing from the matrix of these samples. The grain size distribution is seriate, although they contain many small lithic clasts (figure 2). Thin section 63526,9 contains a nice granoblastic norite clast.

Chemistry

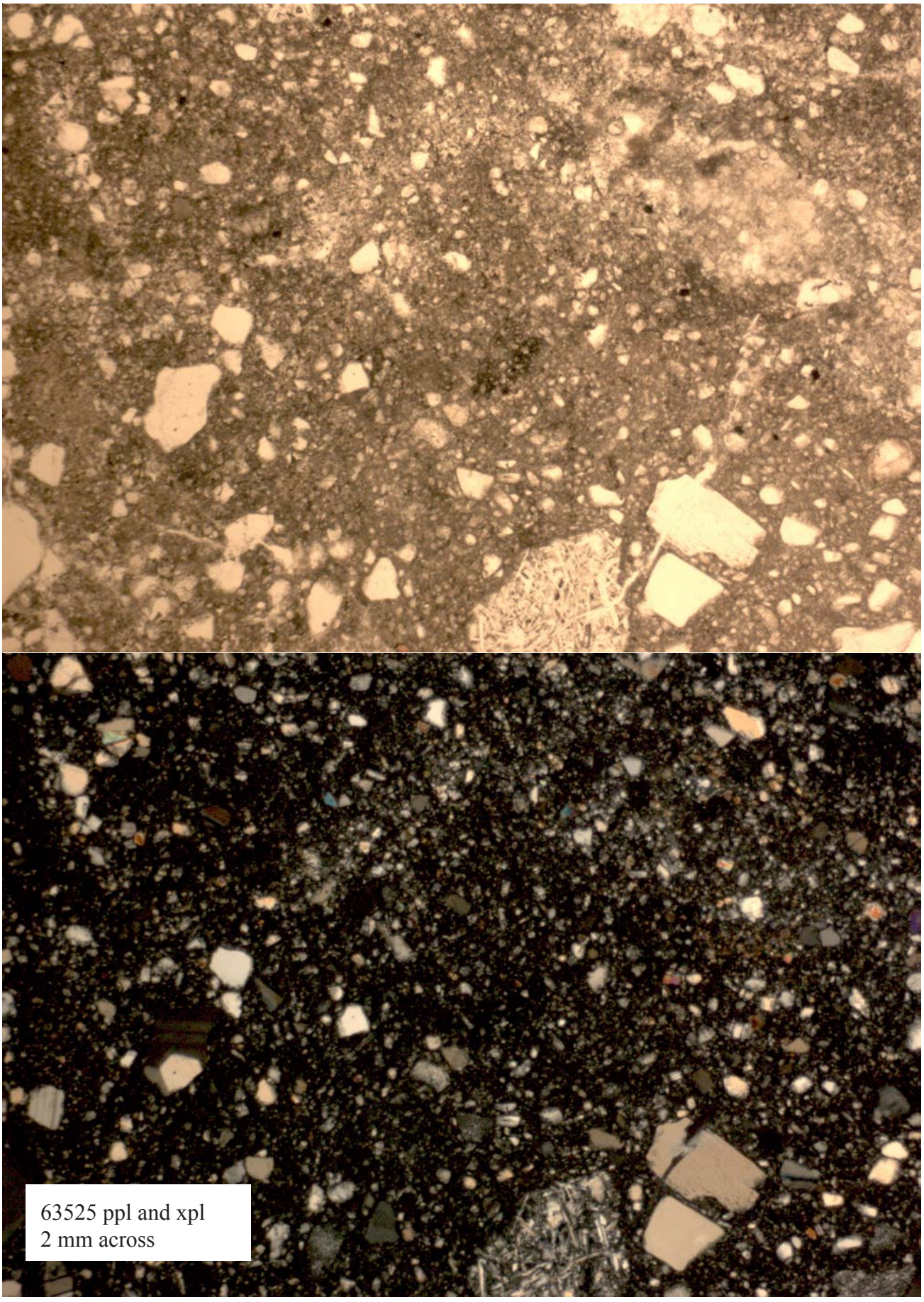
Stoffler et al. (1985) reported the composition of 63526 and 63528.

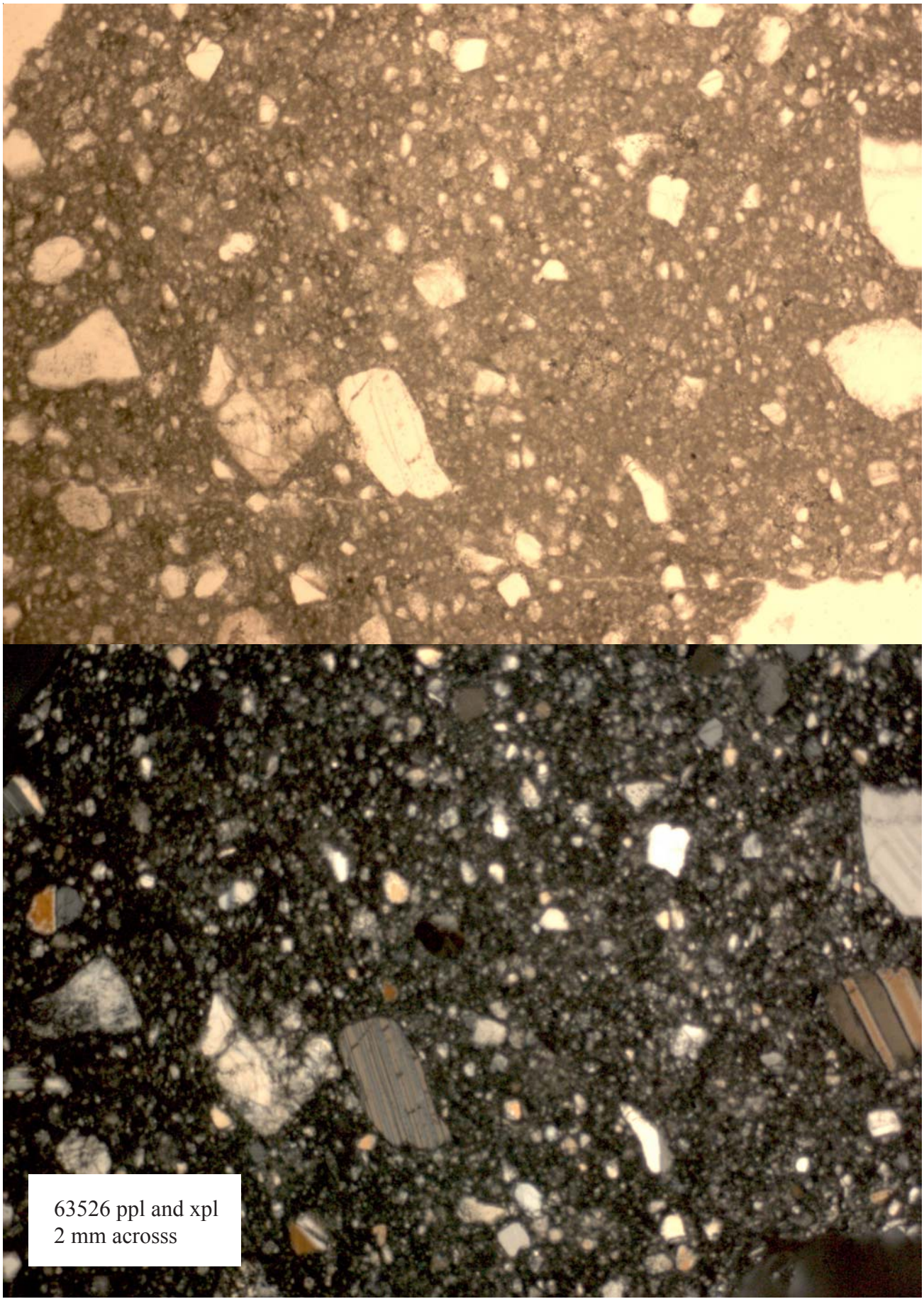
Radiogenic age dating

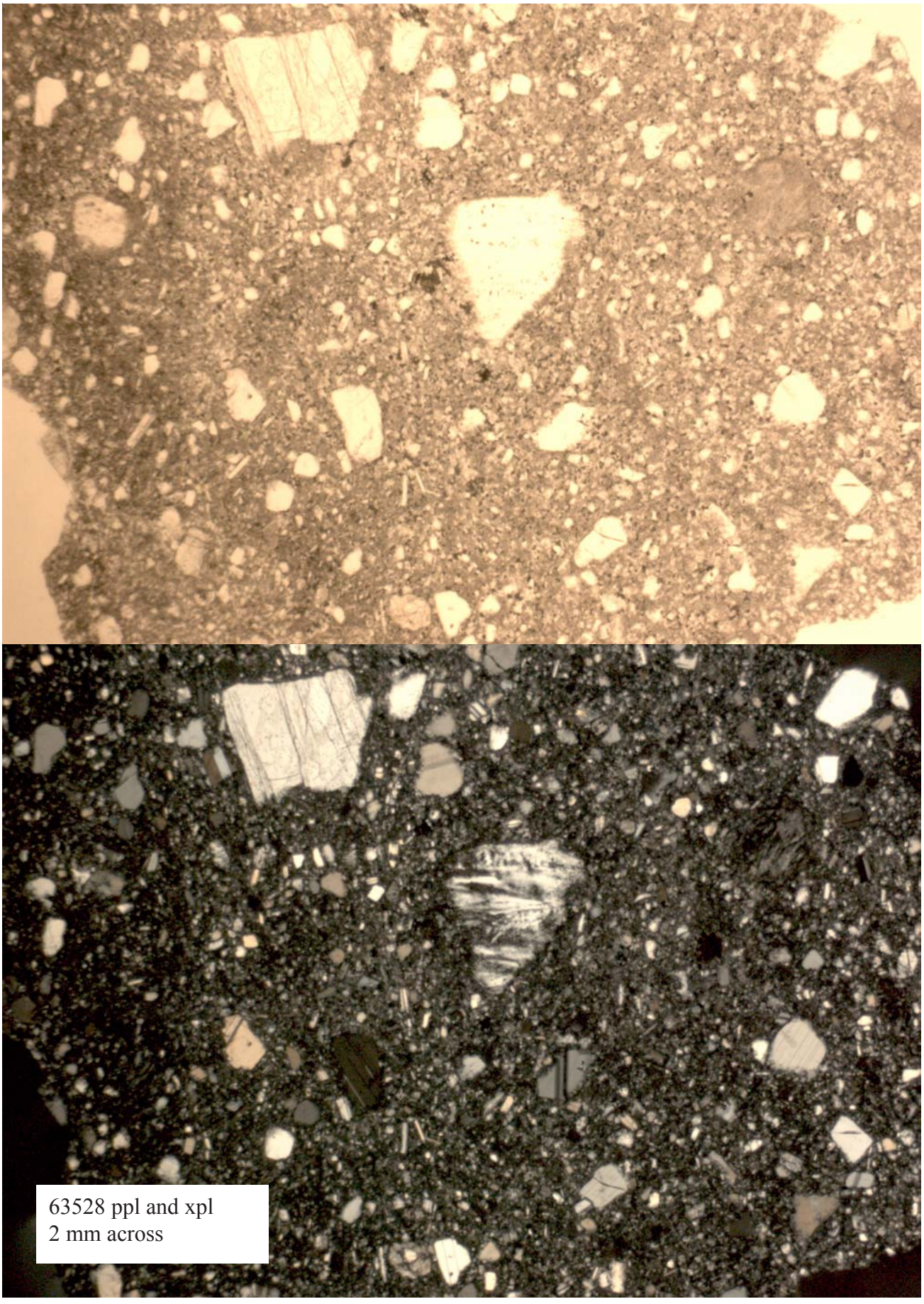
Norman et al. (2006) dated two splits of 63525 (figure 3).

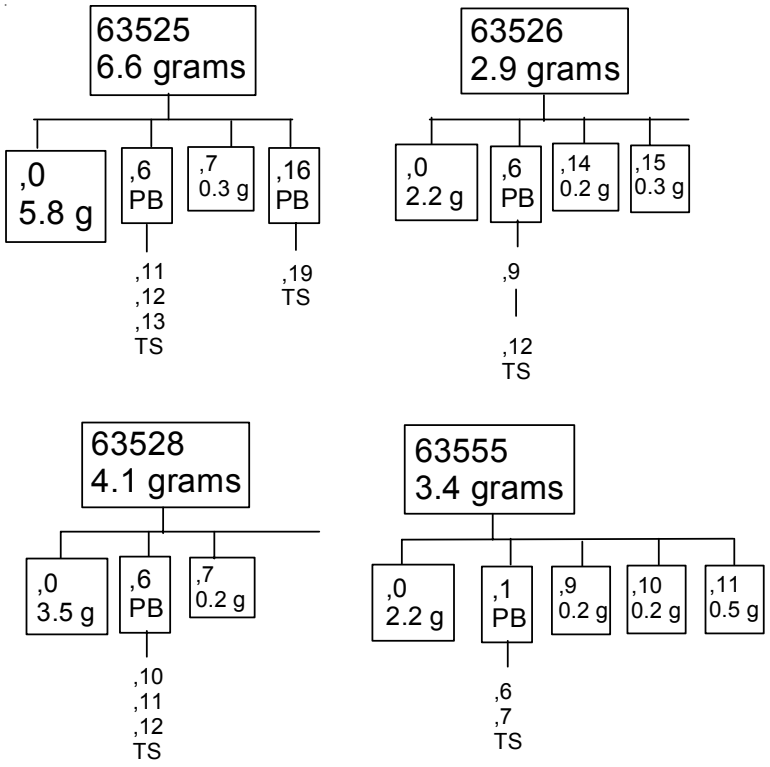
Table 1. Chemical composition of 63526 and 63528.

reference	Stoffler85		
weight			
SiO2 %	45.3	45.3	(a)
TiO2	0.34	0.26	(a)
Al2O3	31	29.7	(a)
FeO	2.79	3.4	(a)
MnO	0.03	0.03	(a)
MgO	2.64	3.3	(a)
CaO	17.2	17.5	(a)
Na2O	0.6	0.47	(a)
K2O	0.34	0.26	(a)
P2O5	0.03	0.03	(a)
S %			
sum			


63525 ppl and xpl
2 mm across


63526 ppl and xpl
2 mm acrosss


63528 ppl and xpl
2 mm across



References for 63525 - 63529

Butler P. (1972a) Lunar Sample Information Catalog Apollo 16. Lunar Receiving Laboratory. MSC 03210 Curator's Catalog. pp. 370.

Hunter R.H. and Taylor L.A. (1981) Rust and schreibersite in Apollo 16 highland rocks: Manifestations of volatile-element mobility. *Proc. 12th Lunar Planet. Sci. Conf.* 253-259.

LSPET (1973b) The Apollo 16 lunar samples: Petrographic and chemical description. *Science* **179**, 23-34.

LSPET (1972c) Preliminary examination of lunar samples. *In* Apollo 16 Preliminary Science Report. NASA SP-315, 7-1—7-58.

Norman M.D., Duncan R.A. and Huard J.J. (2006) Identifing impact events within the lunar cataclysm from ^{40}Ar-^{39}Ar ages and compositions of Apollo 16 impact melt rocks. *Geochim. Cosmochim. Acta* **70**, 6032-6049.

Phinney W. and Lofgren G. (1973) Description, classification and inventory of Apollo 16 rake samples from stations 1, 4 and 13. Curators Office.

Ryder G. and Norman M.D. (1980) Catalog of Apollo 16 rocks (3 vol.). Curator's Office pub. #52, JSC #16904

Stöffler D., Ostertag R., Reimold W.U., Borchardt R., Malley J. and Rehfeldt A. (1981) Distribution and provenance of lunar highland rock types at North Ray Crater, Apollo 16. *Proc. 12th Lunar Planet. Sci. Conf.* 185-207.

Stöffler D., Bischoff A., Borchardt R., Burghele A., Deutsch A., Jessberger E.K., Ostertag R., Palme H., Spettel B., Reimold W.U., Wacker K. and Wanke H. (1985) Composition and evolution of the lunar crust in the Descartes highlands. *Proc. 15th Lunar Planet. Sci. Conf.* in J. Geophys. Res. **90**, C449-C506.

Sutton R.L. (1981) Documentation of Apollo 16 samples. In Geology of the Apollo 16 area, central lunar highlands. (Ulrich et al.) U.S.G.S. Prof. Paper 1048.