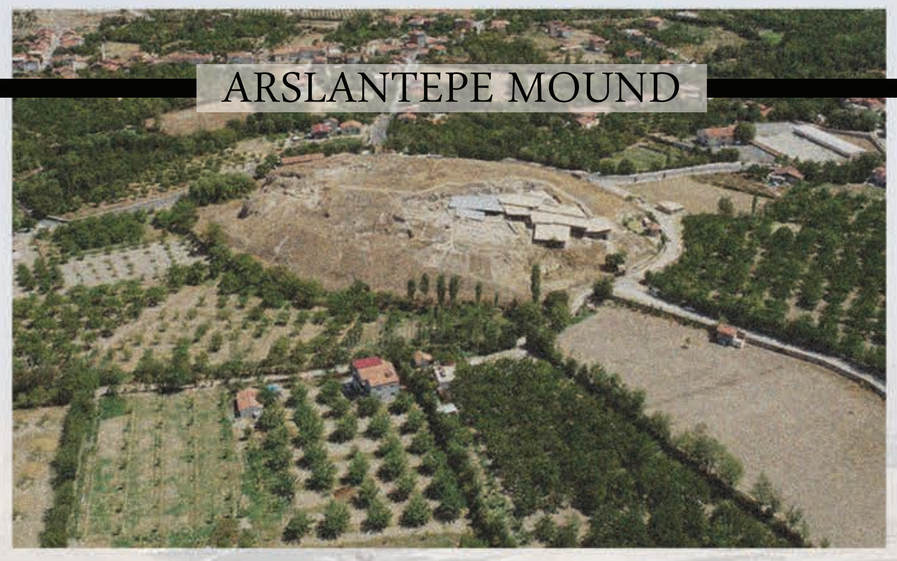
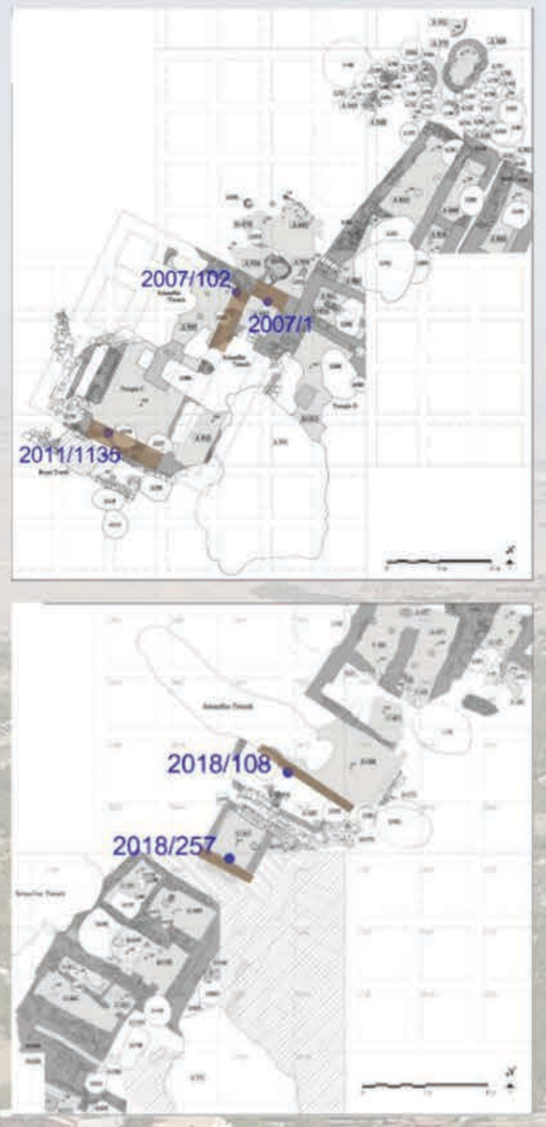
Lime Production in the Late Chalcolithic Period: The Case of Arslantepe (Eastern Anatolia)

INTRODUCTION



Plaster and mortar samples from Arslantepe (Turkey) have the potential to provide unique information about late Chalcolithic lime production and adhibition during the 4th millennium BCE. A marly limestone has been identified as the starting raw material for lime production, which is likely to come from two different sources (local and brought from a different part of the Malatya plain). Furthermore, different aggregate selection and production techniques were detected in the samples, which are likely related to the function of the buildings. Evidence of re-plastering was also discovered in the two elite houses, which most likely refers to routine maintenance.

MAPS



Temple C:

(A900 RM3 VII 2011/1135)

(A900 M2 VII 2007/102)

(A950 M1 VII 2017)

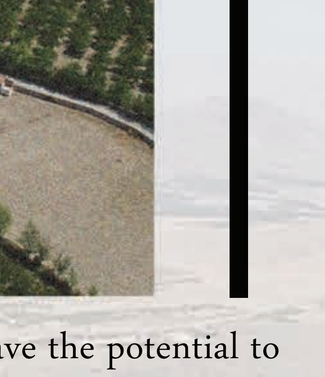
Elite residences:

D7(3)
(A1496 M3 VII 2018/257)

D6(12)
(A1489 13a V8 2018/108)

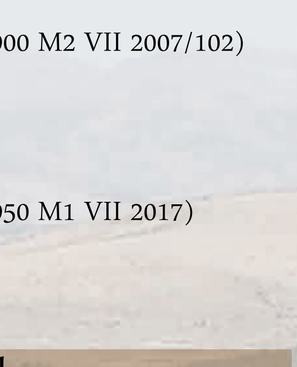
METHODOLOGY SAMPLES

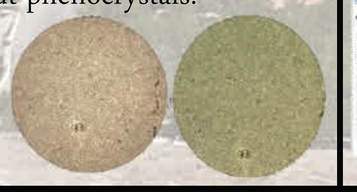
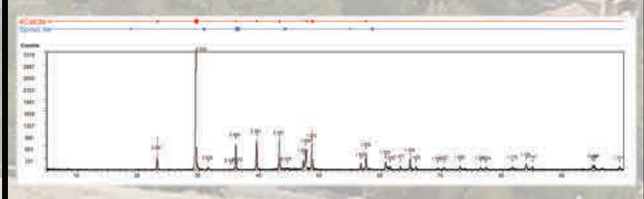
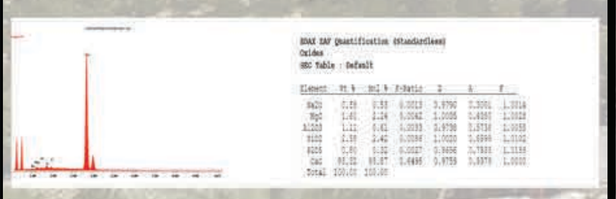
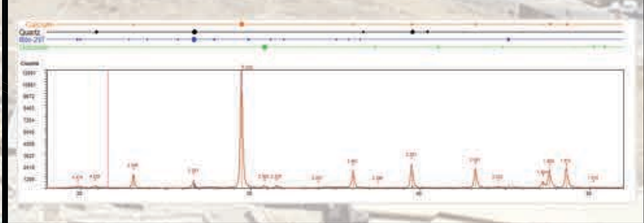
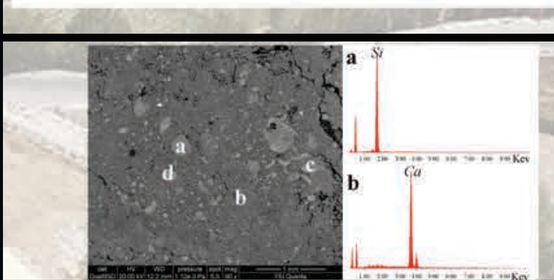
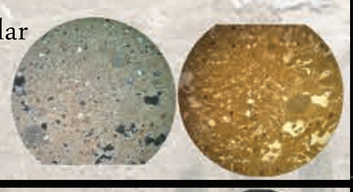
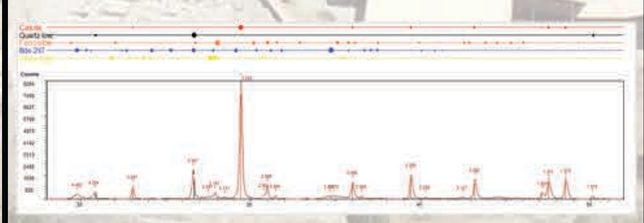
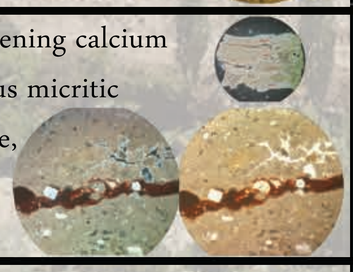
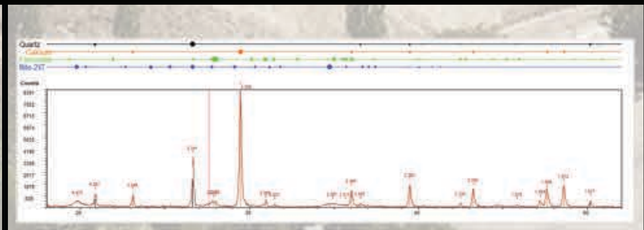
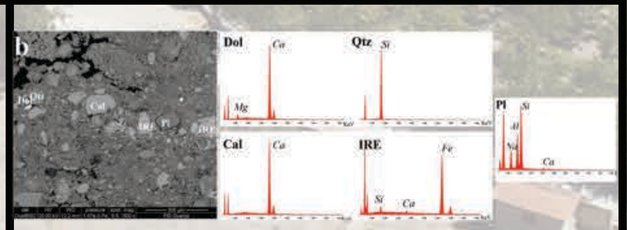
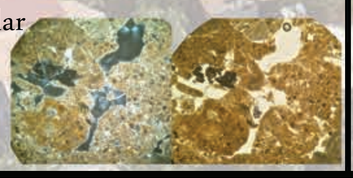
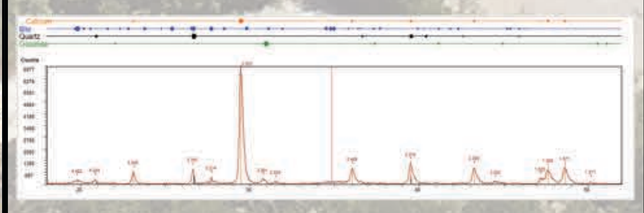
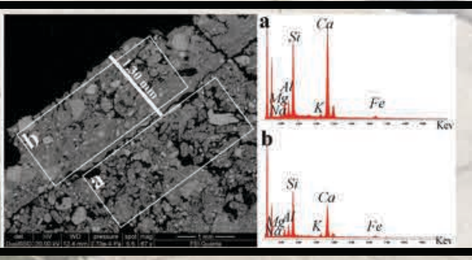
1- Optical Microscopy:



2- X-Ray powder diffraction:

3- Scanning electron microscopy coupled with energy dispersive spectrometric analysis:



A900 RM3 VII 2011/1135	STONE	Isotropic texture without phenocrystals. Calcite was mainly identified as micritic. 		
A900 M2 VII 2007/102	PLASTER B/A < 1:3	Air-hardening calcium-rich lime, homogeneous micritic texture. Irregular shape, no orientation & secondary calcite. 		
A950 M1 VII 2017	PLASTER & MORTAR B/A < 1:3	Air-hardening calcium-rich lime, homogeneous micritic texture. Irregular shape, no orientation & secondary calcite. 		 Fossil shell Bone Charcoal
D7(3) A1469 M3 VII 2018/257	PLASTER B/A < 1:3 Four layers	Four layers of air-hardening calcium rich lime, homogeneous micritic texture. Irregular shape, no orientation & secondary calcite. 		
D6(12) A1489 13a VII 2018/108	PLASTER B/A < 1:3 External part is less rich in aggregate than the internal.	Air-hardening calcium-rich lime, homogeneous micritic texture. Irregular shape, no orientation & secondary calcite. 		

RECOMMENDATION:

1- Further qualitative and quantitative chemical analysis could be done on plaster samples from both temple C and the two elite residences using (confocal) micro-X-ray fluorescence spectroscopy (CμXRF).

2- Chemical mapping could be done on the replastering layers in both elite residence.

3- Further analyses could be done on the pigment in each layer in sample D7(3) A1469 M3 VII 2018/257 (elite residence).

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