Preliminary Study of Alabaster Vessels from Building 33 in Shahr-i Sokhta: Typology and Petrographic Analyses

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Distributional and quantitative analysis of alabaster[2] artefacts from *Building 33*, found both on the surface and *in situ*

The alabaster vessels were discovered in a fragmentary condition, both on the surface of the rooms visible during the survey of *Building 33* (13 fragments, Table 1) and, during the excavation, in the layers inside the rooms of the building (13 fragments, Fig. 1; Tab. 2; Tab. 3).

Building 33, fragments of alabaster artefacts from the surface of the area occupied by the building

Due to its prominent position inside the site, *Building 33* is so exposed to atmospheric agents (especially the wide temperature range and the strong north-east winds) that the floors of the rooms attributed to Layer 1 (2600-2450 BC) of the building are covered by a thin layer of earth and in some cases nothing at all.

1. The site of Shahr-i Sokhta is fundamental for understanding the commercial contacts between this area and the civilisations of Sumer in southern Iraq, Elam in south-western Iran and others is the Gulf of Persia and the Valley of the Indus during the Bronze Age (Piperno - Salvatori 1982; Amiet 1986; Kenoyer 1991; Potts 1994; Lamberg-Karlovsky 1996: 128-216; Crawford 1998; Kenoyer 1998; Cortesi *et al.* 2008) In relation to their symbolic value, the alabaster artefacts make it possible to study the circulation of material goods, trade and exchange, and relations of influence and domination among the various settlements of the Near East.
2. In mineralogical terms, the alabaster artefacts described in this paper are composed of calcite (a polymorph of calcium carbonate), rather than gypsum (calcium sulphate); see below.

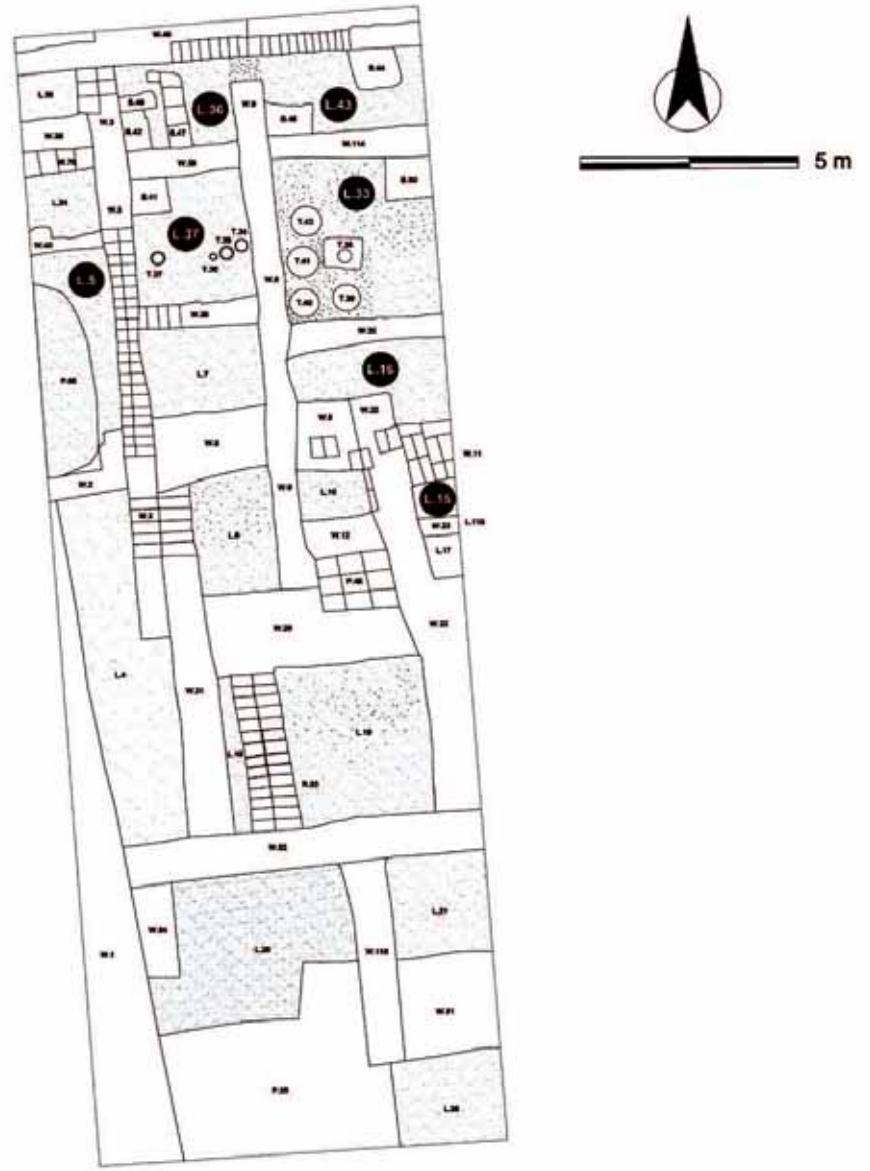

Fig. 1: floor-plan of Building 33 and distribution of the alabasters (drawing by R. Rivoltella).

The calcite artefacts from the superficial layers of the area of the building were discovered above all in the northern sector, as were the alabaster fragments recovered *in situ*.

Although the alabaster artefacts were all identified in the area occupied by the building, it became necessary to operate a distinction between those discovered on the surface and those discovered *in situ*.

Most of the calcite fragments are from conical bowls of small to medium size, while a smaller number are from containers/mortars.

Building 33, fragments of alabaster artefacts in situ

The northern sector of the building was used for the preparation and cooking of food (see the preliminary report on the excavations by E. Ascalone in this volume).

In this sector, one alabaster artefact was discovered in L.5 (Fig. 5). In L.36 there are three benches (B.42, B.47, B.49), near which two fragments of calcite conical bowls were discovered (Figs. 14-15). In the passageway connecting L.36 to L.43, characterised by two benches, four alabaster fragments were discovered (Figs. 20, 21, 26, 27). Room L.36 is separated from L.37 by a badly eroded foundation wall, composed of mud bricks (W.39). Discovered in the stratigraphic unit that covered the foundation and partially filled the two rooms L.36+L.37 were three fragments of alabaster bowls (Figs. 7, 8, 16).

In room L.37 there is a bench (B.41) and four ovens (T.34, T.35, T.36, T.37), while L.33 is characterised by the presence of five *tannurs*. An alabaster vessel fragment (Fig. 6) was discovered in room L.33, where the largest installation is found (T.38), in an almost central position, with another three hearths next to it. To the south-west of these, in room L.16, also in the kitchen part of the building, another fragment of an alabaster receptacle was brought to light (Fig. 3).

The bulk of the artefacts, especially the conical bowls, were discovered in contexts datable to a period from 2600 to about 2450 BC.

In just one case, in a deep assay performed in room L.15, a fragment of vessel (Fig. 4) attributable to Layer 3 of the building, corresponding to Phases 5a of the

Catalogue number	Locus	Alabaster pottery found on the surface	Dating
1	Northern sector	SiS.17.33.17 (Fig. 2)	2600-2450 BC
9	SiS.17.33.33/1 - L.36+L.43	SiS.17.33.95 (Fig. 9)	2600-2450 BC
10	SiS.17.33.33/2 - L.36+L.43	SiS.17.33.96 (Fig. 10)	2600-2450 BC
11	SiS.17.33.33/3 - L.36+L.43	SiS.17.33.97 (Fig. 11)	2600-2450 BC
12	SiS.17.33.33/4 - L.36+L.43	SiS.17.33.98 (Fig. 12)	2600-2450 BC
13	SiS.17.33.33/5 - L.36+L.43	SiS.17.33.99 (Fig. 13)	2600-2450 BC
17	SiS.17.33.33/9 - L.36+L.43	SiS.17.33.128 (Fig. 17)	2600-2450 BC
18	SiS.17.33.33/10 - L.36+L.43	SiS.17.33.129 (Fig. 18)	2600-2450 BC
19	SiS.17.33.33/11 - L.36+L.43	SiS.17.33.130 (Fig. 19)	2600-2450 BC
22	SiS.17.33.33/14 - L.36+L.43	SiS.17.33.133 (Fig. 22)	2600-2450 BC
23	SiS.17.33.33/15 - L.36+L.43	SiS.17.33.134 (Fig. 23)	2600-2450 BC
24	SiS.17.33.33/16 - L.36+L.43	SiS.17.33.135 (Fig. 24)	2600-2450 BC
25	SiS.17.33.33/14 - L.36+L.43	SiS.17.33.136 (Fig. 25)	2600-2450 BC

Tab.1: distributional analysis of the alabaster artefacts found on the surface in *Building 33*.

Catalogue number	Locus	Alabaster artefacts *in situ*	Dating
3	L.16	SiS.17.33.33 (Fig. 3)	2600-2450 BC
4	L.15	SiS.17.33.35 (Fig. 4)	2800-2620 BC
5	L.5	SiS.17.33.21 (Fig. 5)	2600-2450 BC
6	L.33	SiS.17.33.88 (Fig. 6)	2600-2450 BC
7	L.36+L.37	SiS.17.33.89 (Fig. 7)	2600-2450 BC
8	L.36+L.37	SiS.17.33.91 (Fig. 8)	2600-2450 BC
14	L.36	SiS.17.33.103 (Fig. 14)	2600-2450 BC
15	L.36	SiS.17.33.104 (Fig. 15)	2600-2450 BC
16	L.36+L.37	SiS.17.33.105 (Fig. 16)	2600-2450 BC
20	L.36+L.43	SiS.17.33.131 (Fig. 20)	2600-2450 BC
21	L.36+L.43	SiS.17.33.132 (Fig. 21)	2600-2450 BC
26	L.36+L.43	SiS.17.33.137 (Fig. 26)	2600-2450 BC
27	L.36+L.43	SiS.17.33.138 (Fig. 27)	2600-2450 BC

Tab. 2: distributional analysis of the alabaster artefacts found *in situ* in *Building 33*.

site, between 2800-2620 BC, was discovered.

The fragments of artefacts were subdivided by locus as follows:

Context	Alabaster artefacts	Quantity
L.16	SiS.17.33.33 (Fig. 3)	1
L.15	SiS.17.33.35 (Fig. 4)	1
L. 5	SiS.17.33.21 (Fig. 5)	1
L.33	SiS.17.33.88 (Fig. 6)	1
L.36+L.37	SiS.17.33.89 (Fig. 7); SiS.17.33.91 (Fig. 8); SiS.17.33.105 (Fig. 16)	3
L.36	SiS.17.33.103 (Fig. 14); SiS.17.33.104 (Fig. 15)	2
L.36+L.43	SiS.17.33.131 (Fig. 20); SiS.17.33.132 (Fig. 21); SiS.17.33.137 (Fig. 26); SiS.17.33.138 (Fig. 27);	4

Tab. 3: quantitative analysis of the alabaster artefacts inside *Building 33*.

Morphology and typology

In the 2017 excavation campaign two main forms were identified: the truncated cone-shaped bowl and the mortar with a square cross-section.

The forms of the alabaster artefacts discovered in *Building 33* are the same as those identified during the research conducted at the site of Shahr-i Sokhta from 1967 to 1978 by IsMEO based in Rome[3] and since the late 1990s by the team headed by S.M.S. Sajjadi in grave goods in the necropolis[4].

Alabaster was commonly used for the production of containers of small and medium size from bowls to mortars. Regarding the morphology of the truncated cone-shaped bowls,[5] Type 16 is an open form, with a simple profile and a flat

3. A careful analysis of the craftsmanship and typology of the alabaster vessels of Shahr-i Sokhta was conducted by Ciarla from the late 1970s to the mid 1980s. The study examined 1280 fragments of calcite vessels gathered from the surface of the site of Shahr-i Sokhta and kept in the *Museo Nazionale d'Arte Orientale* in Rome. Of these, only 80 had a complete profile (Ciarla 1981). Discoveries of calcite vessels on the surface had been made in the first ever excavation campaign in Shahr-i Sokhta, which identified, among other items, conical bowls (Tosi 1968: 41-42, figs. 19a, g, i, and 20a) in the Central Quarters (Vidale - Salvatori 1997).

4. Sajjadi 2003a *et al*. See especially the note on alabaster vessels by R. Shirazi: 66-74, figs. 33, 35.

5. In the study published by Casanova on the corpus of alabaster vessels from Susa of the 3rd and 2nd millennia BC kept in the Louvre, the forms seen in Series XI and XII are comparable to those of Shahr-i Sokhta (Casanova 1991: 36, plates 8-9, figs. 8-10).

6. For comparisons with conical and truncated cone-shaped bowls found elsewhere, see: Susa (Mecquenem 1934: figs. 21:7, 60:26; 1943, fig. 71:11; Le Breton 1957: figs. 40: 4, 42: 1, 2, 5; Stéve - Gasche 1971: plate 15:15), Aliabad (Gautier - Lampre 1905: figs. 288, 290, 293), Shahr-i Sokhta (Ciarla 1981: figs. 3a, 4a, 4f, 4i, 8, 12; Tosi 1983a: 179, figs. 16-17), Bactria (Pottier 1984, n°. 195) and Tarut (Burkholder 1984, no. 16c; D.T. Potts 1989: fig. 15 from the right). In Mesopotamia, parallels have been found in Ur (Hall - Woolley 1927: plate LXI, type XVIII; Woolley 1934: plate 176, U. 11818, U. 12673; plate 241-243, RC 13, 14, 16, 19, 20a, 24, 25; Woolley 1955: type JN 27; Woolley 1974: plate 51, Ur III type V), Girsu (Heuzev - Sarzec 1884-1912: plate

base, of small or medium size, with three sub-types distinguishable by the rims. The rims all belong to the category of 'indistinct rims', which do not have a clear boundary between them and the wall of the vessel and can be sharpened, flattened or rounded by the craftsman.

The type of rim in the truncated cone-shaped bowls is considered an element of distinction giving rise to three types:

Type 1a Sharp
Type 1b Flat
Type 1c Round

The number of bowls with a sharpened rim suggests that this feature was intentionally added during the process of manufacture, whereas the rounded rim and above all the flattened rim seem to be accidental and could thus be the result of an error on the part of the craftsman during production.

In all cases the bases are flat, without feet. In some cases, the base is not perfectly flat, but slightly convex, so they would not be stable when placed on a flat surface.

The diameter and height of the vessels vary from as little as a few centimetres, 2.5 × 1.4 cm, for the smallest bowls to 20 × 30 cm, deduced from the largest fragments.

Catalogue number	Form	Type
2 SiS.17.33.17 (Fig. 2)	Bowl	Rim Type 1a
3 SiS.17.33.33 (Fig. 3)	Bowl, wall	
4 SiS.17.33.35 (Fig. 4)	Bowl	Rim Type 1a
5 SiS.17.33.51 (Fig. 5)	Bowl, wall	
6 SiS.17.33.88 (Fig. 6)	Bowl	Rim Type 1b
7 SiS.17.33.89 (Fig. 7)	Bowl	Rim Type 1a
8 SiS.17.33.91 (Fig. 8)	Bowl	Rim Type 1a

44b.1) and Sippar (Walker - Collon 1980: plates 27-21).

9 SiS.17.33.95 (Fig. 9)	Bowl	Rim Type 1a
10 SiS.17.33.96 (Fig. 10)	Bowl	Rim Type 1a
11 SiS.17.33.97 (Fig. 11)	Bowl, base	
12 SiS.17.33.98 (Fig. 12)	Bowl	Rim Type 1a
13 SiS.17.33.99 (Fig. 13)	Bowl, wall	
14 SiS.17.33.103 (Fig. 14)	Bowl, base	
15 SiS.17.33.104 (Fig. 15)	Bowl	Rim Type 1a
16 SiS.17.33.105 (Fig. 16)	Bowl, wall	
17 SiS.17.33.128 (Fig. 17)	Bowl	Rim Type 1a
18 SiS.17.33.129 (Fig. 18)	Bowl	Rim Type 1b
19 SiS.17.33.130 (Fig. 19)	Bowl	Rim Type 1b
20 SiS.17.33.131 (Fig. 20)	Bowl	Rim Type 1c
21 SiS.17.33.132 (Fig. 21)	Bowl, wall	
22 SiS.17.33.133 (Fig. 22)	Bowl	Rim Type 1b
23 SiS.17.33.134 (Fig. 23)	Mortar, base	
24 SiS.17.33.135 (Fig. 24)	Bowl, wall	
25 SiS.17.33.136 (Fig. 25)	Bowl, wall	Rim Type 1a
26 SiS.17.33.137 (Fig. 26)	Mortar? Wall	
27 SiS.17.33.138 (Fig. 27)	Bowl	Rim Type 1b

Tab. 4: morphology and typology of the artefacts discovered in 2018.

The bases discovered in a fragmentary condition appear to be circular; in some cases they are flat and in others slightly convex, giving clues as to their function. Some of the conical bowls discovered are of small and medium size, varying only slightly from one to the other, suggesting that they were stacked on top of each other.

The alabaster vessels with a quadrangular cross-section, interpretable as mortars e.g. SiS.17.33.134 (Fig. 23), have parallels in the Eastern Residential Area and in Mundigak[7]. In this case, the shape does not appear to be distinctive from the chronological point of view.

The alabaster vessel fragments examined in our study are listed in the catalogue following the text below.

7. On the vessels with a quadrangular cross-section, see Vidale - Salvatori 1997: fig. 248, 12. These are similar to those discovered in the Eastern Residential Area (Tosi 1969a: fig. 234; Ciarla 1979: fig. 8) and very similar to what is seen in Mundigak in levels dated to Period IV, 1 (Casal 1961: fig. 134, 15).

Sources of calcite are relatively frequent in the lower Hirmand basin, and Shahr-i Sokhta is situated in the terminal stretch of the river. The outcropping rock, exposed by exogenous agents such as tectonic movements, could shed material that is transformed into polished pebbles as it is transported by the river. In the geological map of the area, Shahr-i Sokhta lies in a stony alluvial plain, characterised by various types of sedimentary deposit, some of which contain washed pebbles. The sedimentary deposits near Shahr-i Sokhta might well have been the sources of alabaster in the form of pebbles, representing a rich natural resource for the production of vessels in calcite.

During the survey conducted in the area of *Building 33*, a washed pebble was discovered (Fig. 30; SiS.17.33.52). Of small dimensions, it was shown by petrographic analyses (see below) to be composed of alabaster (Figs. 28-29).

Calcite pebbles of small and medium size might have been the main raw material used for making the vessels of Shahr-i Sokhta, where some semi-processed pebbles were found on the surface[9]. The bowls are almost all characterised by polychromatic bands.

The distribution of the bowls of small, medium and large dimensions discovered in the 2017 excavation campaign was uneven: 6 small, 20 medium and 2 large. It is no accident that the calcite vessels of Shahr-i Sokhta are mainly medium-sized, with a diameter rarely greater than 20 cm. Vessels of large dimensions, such as those produced in Egypt, require the presence of quarries from which large blocks of calcite can be extracted.

Petrographic analyses of the alabasters discovered in *Building 33*

Petrographic analyses of some of the alabaster fragments discovered were conducted in collaboration with Dr. Domenico Mannetta10. The alabaster vessels brought to light during the excavation were analysed after first separating them into fragments with polychromatic bands, characteristic of Shahr-i Sokhta (Figs. 31-34), and marbled monochromatic fragments, mostly white, which when

9. Ciarla - Bökönyi 1985: fig. 4 cylindrical, fig. 5 conical.
10. Università di Roma 'La Sapienza', Dipartimento di Scienze della Terra.

viewed by optical microscope recall the calcite typical of the site of Jiroft.

The term alabaster is generically used to refer to evaporite minerals composed of either gypsum (hydrous calcium sulphate, CaSO4) or calcite (calcium carbonate, CaCO3) which precipitate from particularly hard waters in subterranean environments as a result of evaporation.

Petrographic thin sections with a thickness of 30 microns were observed by polarised light microscope[11] using both a single polar and crossed polars. The samples share highly similar characteristics, especially an alternation of laminae with radial and acicular-columnar textures (Figs. 28-29). The term texture refers to the geometric characteristics and the spatial arrangement of the individual crystals and the spatial ratios between them, in a level that crystallised all at the same time.

The shape and spatial arrangement of the crystals that make up the aggregate, i.e. the texture, depend on the state of saturation of the water and the rate of percolation, which is determined in turn by average annual rainfall and vegetation.

The columnar texture is formed in conditions of constant percolation, in climates that do not have a strong contrast between seasons in terms of average annual rainfall. If the solution has an average degree of supersaturation, or if the solution contains extraneous ions, such as magnesium, the faces of the columnar crystals may be curved.

As the supersaturation and in some cases the dissolved magnesium content increases, crystals elongated along the direction of growth (generally perpendicular to the substrate) are formed. These crystals, characterised by pointed ends and a ratio of width to length greater than 1/6, are called acicular. On some levels a lengthening of the crystals is observed that could indicate a transition between columnar and acicular textures. This highly porous "hybrid" texture could be the result of a highly variable flow, with wet periods alternating with dry periods.

The columnar texture is typical of stalagmites or levels of stalagmites that formed in conditions of near equilibrium, relatively low supersaturation, constant

11. Images of some of the samples examined are shown in the text (Figs. 28-34).

water flow and the absence of impurities in the solution that grows the speleothems. A succession of diverse textures in the same concretion provides information on the environmental and climatic context of formation and the availability of water resources in particular.

Conclusions

The study of the alabasters of Shahr-i Sokhta is still in the preliminary phase. The excavations performed during the first archaeological campaign showed that most of the vessels found *in situ* in *Building 33* were unearthed in the kitchen and storage areas, whose period of use corresponds to phase 1 of the building (from 2600 to 2450 BC). In this context, the alabaster vessels seem to reflect above all the utilitarian and functional aspects, constituting utensils of the domestic type, although their composite material confirms the prestige and ideological importance of the building.

The interesting element is that until now, no practical use of bowls – as indicated by the presence of the alabasters in the area of the kitchens – had been identified in Mesopotamian contexts[12].

The morphology of the vessels is homogeneous. Mostly bowls of medium size (only one fragment of a mortar is attested), they may be distinguished by their rims into three types; Type 1a (sharp), Type 1b (flat) and Type 1c (round).

The geological map highlights alluvial sedimentary deposits in the area of Shahr-i Sokhta, with the presence of calcite pebbles; the petrographic analysis enabled the study of the finds, identifying some characterised by the presence of other material such as quartz and those with veining arising from ferrous compounds, typical of Shahr-i Sokhta. From the technological point of view, these pebbles can be associated with the vessels. Research in the wider region will help us to analyse in greater detail the quarries of this material and the process of extraction.

12. Sippar, Girsu and Ur (see note 13).

The new excavations confirm the fundamental role of Shahr-i Sokhta in the lithic industry and technology of the cultures of the 3rd millennium in Iran, the valley of the Indus and southern Turkmenistan.

Catalogue of alabaster vessels

(Fig. 2)

SiS.17.33.17	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of small dimensions ,simple profile, indistinct rim ,sharp at the edge
Colour	orange veining on a pale background
Condition	fragmentary
Length	2.5 cm
Width	1.7 cm
Thickness	0.4 cm
US/Locus	Northern sector
Level	surface
Layer *Building33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite n°. 54a-c (Figs. 32-34)

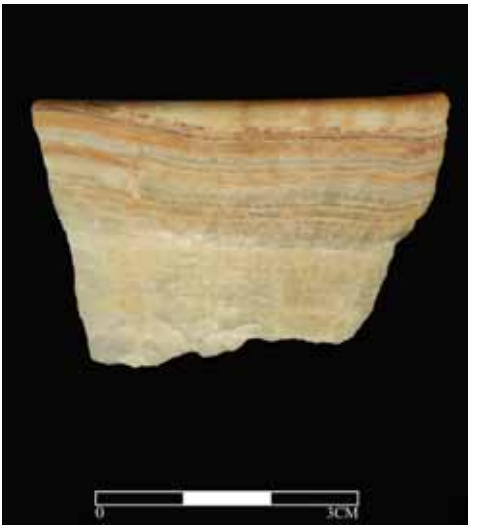

Fig. 2: SiS.17.33.17 (photo by M. Rahmani)

(Fig. 3)

SiS.17.33.33	
Form	bowl
Type	not classifiable
Description	wall of open truncated cone-shaped bowl of medium dimensions, simple profile
Colour	pale monochrome
Condition	fragmentary
Length	4.1 cm
Width	3.1 cm
Thickness	1.2 cm
US/Locus	L. 16
Level	-0.15 m
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 3: SiS.17.33.33 (photo by M. Rahmani).

(Fig. 4)

SiS.17.33.35	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of small dimensions, simple profile, indistinct rim, sharp at the edge
Colour	orange veining on a pale background
Condition	fragmentary
Length	4.1 cm
Width	3.1 cm
Thickness	1.2 cm
US/Locus	L. 15
Level	-0.47 m
Layer *Building 33*	2
Period of the site	II (Phase 6)
Chronology	2800-2620 BC
Petrographic analysis	calcite

Fig. 4: SiS.17.33.35 (photo by M. Rahmani).

(Fig. 5)

SiS.17.33.51	
Form	bowl
Type	not classifiable
Description	wall of an open truncated cone-shaped bowl of medium dimensions, simple profile
Colour	beige veining on a pale background
Condition	fragmentary
Length	1.7 cm
Width	1.7 cm
Thickness	0.6 cm
US/Locus	L.5
Level	-0.10 m
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 5: SiS.17.33.51 (photo by M. Rahmani).

(Fig. 6)

SiS.17.33.88	
Form	bowl
Type	1b
Description	open truncated cone-shaped bowl of small dimensions, simple profile, indistinct rim, flattened at the edge
Colour	pale monochrome
Condition	fragmentary
Length	1.6 cm
Width	1.2 cm
Thickness	0.5 cm
US/Locus	L. 33
Level	-0.20 m
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 6: SiS.17.33.88 (photo by M. Rahmani)

(Fig. 7)

SiS.17.33.89	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, sharp at the edge
Colour	bands of orange veining on a pale yellowish background
Condition	fragmentary
Length	3.7 cm
Width	2.9 cm
Thickness	0.6 cm
US/Locus	L.36 + L.37
Level	-0.10 m
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 7: SiS.17.33.89 (photo by M. Rahmani

(Fig. 8)

SiS.17.33.91	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, sharp at the edge
Colour	bands of orange veining on a pale yellowish background
Condition	fragmentary
Length	4.7 cm
Width	2.0 cm
Thickness	0.8 cm
US/Locus	L.36 + L.37
Level	-0.10 m
Phase *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 8: SiS.17.33.91 (photo by M. Rahmani).

(Fig. 9)

SiS.17.33.95	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, sharp at the edge
Colour	bands of orange veining on a pale yellowish background
Condition	fragmentary
Length	7.2 cm
Width	4.8 cm
Thickness	0.7 cm
Diameter	13 cm
US/Locus	SiS.17.33.33/1 L.36+L.43
Level	surface
Layer Building 33	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 9: SiS.17.33.95 (photo by M. Rahmani).

(Fig. 10)

SiS.17.33.96	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of small dimensions, simple profile, indistinct rim, sharp at the edge
Colour	orange and brown veining on a pale yellowish background
Condition	fragmentary
Length	4.2 cm
Width	3.4 cm
Thickness	0.7 cm
US/Locus	SiS.17.33.33/2 - L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite n°. 53a (Fig. 31)

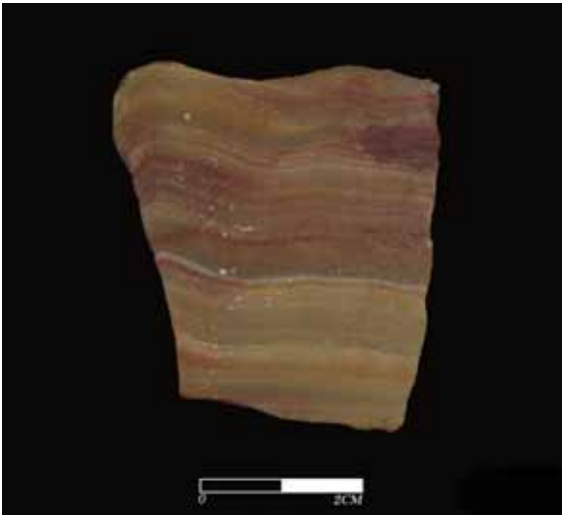

Fig. 10: SiS.17.33.96 (photo by M. Rahmani).

(Fig. 11)

SiS.17.33.97	
Form	bowl
Description	truncated cone-shaped bowl of medium dimensions, slightly convex bottom
Colour	claret veining on a pale yellowish background
Condition	fragmentary
Length	2.2 cm
Width	2.6 cm
Thickness	0.8 cm
Diameter	3.5 cm
US/Locus	SiS.17.33.33/3 - L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 11: SiS.17.33.97 (photo by M. Rahmani).

(Fig. 12)

SiS.17.33.98	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, sharp at the edge
Colour	orange veining on a pale yellowish background
Condition	fragmentary
Length	3.2 cm
Width	1.9 cm
Thickness	0.8 cm
US/Locus	SiS.17.33.33/4 - L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 12: SiS.17.33.98 (photo by M. Rahmani).

(Fig. 13)

SiS.17.33.99	
Form	bowl
Type	
Description	wall of an open truncated cone-shaped bowl of medium dimensions, simple profile
Colour	pale beige monochrome with whitish veining
Condition	fragmentary
Length	3.3 cm
Width	2.3 cm
Thickness	1.2 cm
US/Locus	SiS.17.33.33/5 - L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

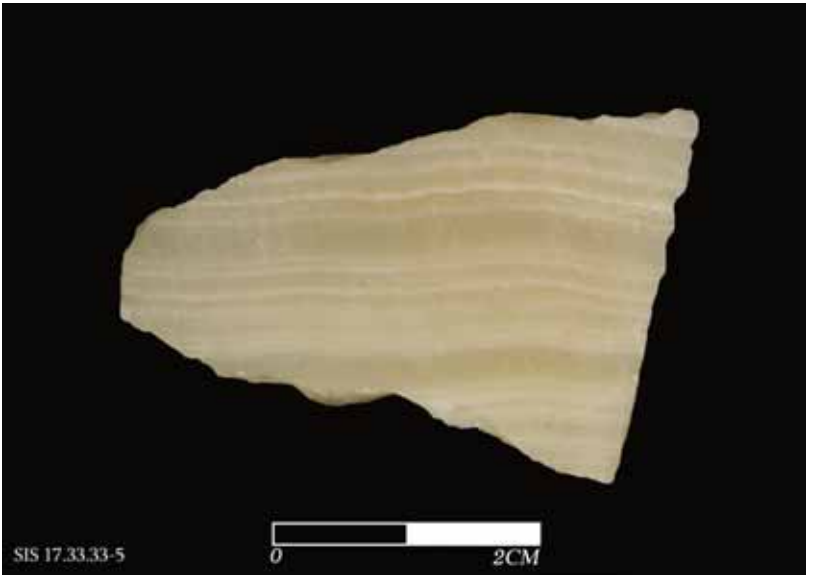

Fig. 13: SiS.17.33.99 (photo by M. Rahmani).

(Fig. 14)

SiS.17.33.103	
Form	bowl
Description	truncated cone-shaped bowl of medium dimensions, slightly convex bottom
Colour	orange and brown veining on a pale orange background
Condition	fragmentary
Length	1.9 cm
Width	0.4 cm base 0.3 cm
Thickness	1.2 cm
US/Locus	L. 36
Level	-0.25 m
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 14: SiS.17.33.103 (photo by M. Rahmani).

(Fig. 15)

SiS.17.33.104	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, sharp at the edge
Colour	orange veining on a pale background
Condition	fragmentary
Length	2.1 cm
Width	1.4 cm
Thickness	0.5 cm
US/Locus	L. 36
Level	0.25 m
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 15: SiS.17.33.104 (photo by M. Rahmani).

(Fig. 16)

SiS.17.33.105	
Form	bowl
Type	not classifiable
Description	wall of an open truncated cone-shaped bowl of medium dimensions, simple profile
Colour	orange veining on a pale background
Condition	fragmentary
Length	2.8 cm
Width	2.5 cm
Thickness	1.7 cm
US/Locus	L.36+L.37
Level	-0.10 m
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 16: SiS.17.33.105 (photo by M. Rahmani).

(Fig. 17)

SiS.17.33.128	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of large dimensions, simple profile, indistinct rim, sharp at the edge
Colour	orange veining on a pale yellowish background
Condition	fragmentary
Length	9.4 cm
Width	8 cm
Thickness	1.2 cm
Diameter	18-20 cm
US/Locus	SiS.17.33.33/9 - L.36+L.43
Level	surface
Layer Building 33	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 17: SiS.17.33.128 (photo by M. Rahmani).

(Fig. 18)

SiS.17.33.129	
Form	bowl
Type	1b
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, flattened at the edge
Colour	orange veining on a pale background
Condition	fragmentary
Length	3.6 cm
Width	3.7 cm
Thickness	0.8 cm
US/Locus	SiS.17.33.33/10 - L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 18: SiS.17.33.129 (photo by M. Rahmani).

(Fig. 19)

SiS.17.33.130	
Form	bowl
Type	1b
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, flattened at the edge
Colour	
Condition	fragmentary
Length	3.6 cm
Width	3.7 cm
Thickness	0.8 cm
US/Locus	SiS.17.33.33/11 - L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 19: SiS.17.33.130 (photo by M. Rahmani).

(Fig. 20)

SiS.17.33.131	
Form	bowl
Type	1c
Description	open truncated cone-shaped bowl of small dimensions, simple profile, indistinct rim, rounded at the edge
Colour	dark and pale orange veining on a dark background
Condition	fragmentary
Length	1.6 cm
Width	1.3 cm
Thickness	0.7 cm
US/Locus	L.36+L.43
Level	-0.35 m.
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

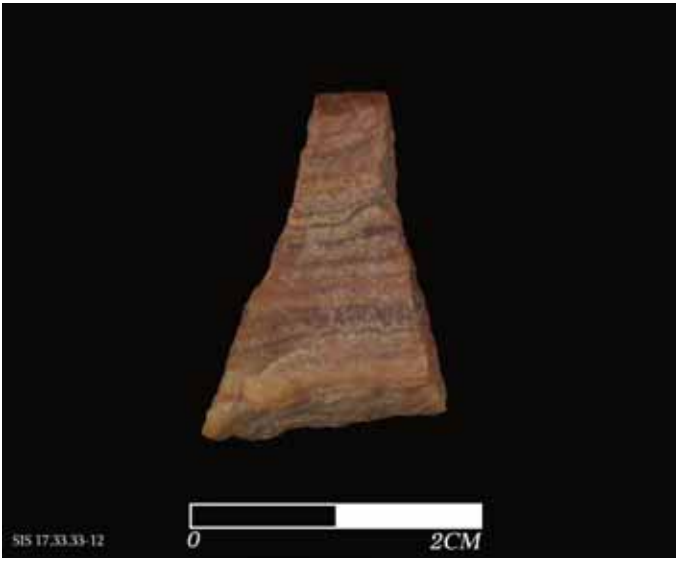

Fig. 20: SiS.17.33.131 (photo by M. Rahmani).

(Fig. 21)

SiS.17.33.132	
Form	bowl
Type	not classifiable
Description	wall of an open truncated cone-shaped bowl of medium dimensions, simple profile
Colour	pale orange and beige veining on a pale background
Condition	fragmentary
Length	6.3 cm
Width	4.1 cm
Thickness	1.2 cm
US/Locus	L.36+L.43
Level	-0.35 m.
Layer Building 33	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 21: SiS.17.33.132 (photo by M. Rahmani).

(Fig. 22)

SiS.17.33.133	
Form	bowl
Type	1b
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, flattened at the edge
Colour	pale orange and beige veining on a pale background
Condition	fragmentary
Length	2.9 cm
Width	4.9 cm
Thickness	1.0 cm
US/Locus	SiS.17.33.33/14 – L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 22: SiS.17.33.133 (photo by M. Rahmani).

(Fig. 23)

SiS.17.33.134	
Form	mortar
Description	cylindrical mortar of medium dimensions, slightly convex bottom
Colour	beige veining on a pale background
Condition	fragmentary
Length	6.2 cm
Width	1.9 cm
Thickness	1.0 cm
Diameter	8 cm
US/Locus	SiS.17.33.33/15 - L.36+L.43
Level	surface
Layer Building 33	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 23: SiS.17.33.134 (photo by M. Rahmani).

(Fig. 24)

SiS.17.33.135	
Form	bowl
Type	not classifiable
Description	wall of an open truncated cone-shaped bowl of large dimensions, simple profile
Colour	beige and orange veining on a pale background
Condition	fragmentary
Length	6.3 cm
Width	4.9 cm
Thickness	1.2 cm
US/Locus	SiS.17.33.33/16 - L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 24: SiS.17.33.135 (photo by M. Rahmani).

(Fig. 25)

SiS.17.33.136	
Form	bowl
Type	1a
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, sharp at the edge
Colour	dark and pale orange veining on a pale background
Condition	fragmentary
Length	2.5 cm
Width	1.8 cm
Thickness	0.4 cm
US/Locus	SiS.17.33.33/17 – L.36+L.43
Level	surface
Layer *Building 33*	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

Fig. 25: SiS.17.33.136 (photo by M. Rahmani).

(Fig. 26)

SiS.17.33.137	
Form	mortar?
Description	wall of a cylindrical form of medium dimensions
Colour	pale brown veining on a pale background
Condition	fragmentary
Length	3.7 cm
Width	4.2 cm
Thickness	1.5 cm
US/Locus	L.36+L.43
Level	-0.35 m.
Layer Building 33	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

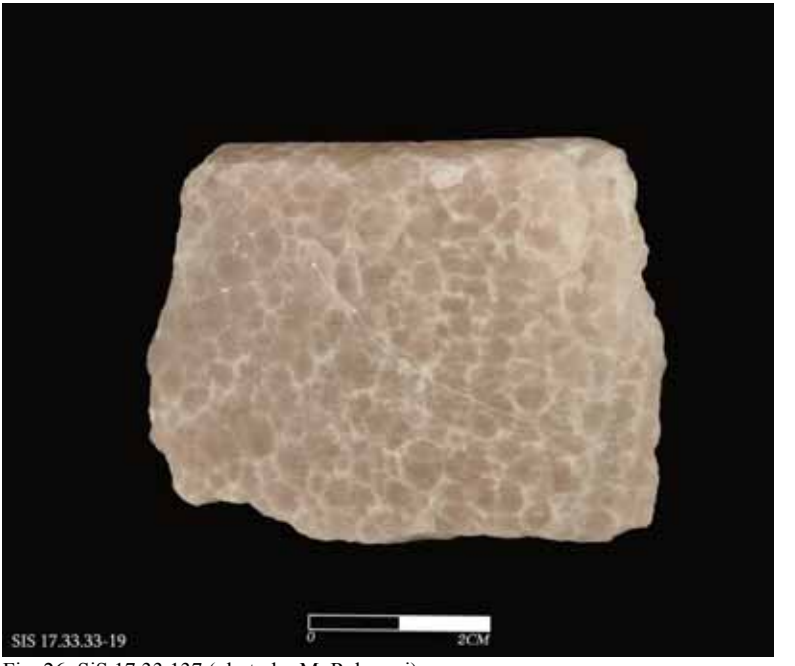

Fig. 26: SiS.17.33.137 (photo by M. Rahmani).

(Fig. 27)

SiS.17.33.138	
Form	bowl
Type	1b
Description	open truncated cone-shaped bowl of medium dimensions, simple profile, indistinct rim, flattened at the edge
Colour	marbled, beige on a pale background
Condition	fragmentary
Length	3.7 cm
Width	4.2 cm
Thickness	1.5 cm
US/Locus	L.36+L.43
Level	-0.35 m.
Layer Building 33	1
Period of the site	III (Phase 4-3)
Chronology	2600-2450 BC
Petrographic analysis	calcite

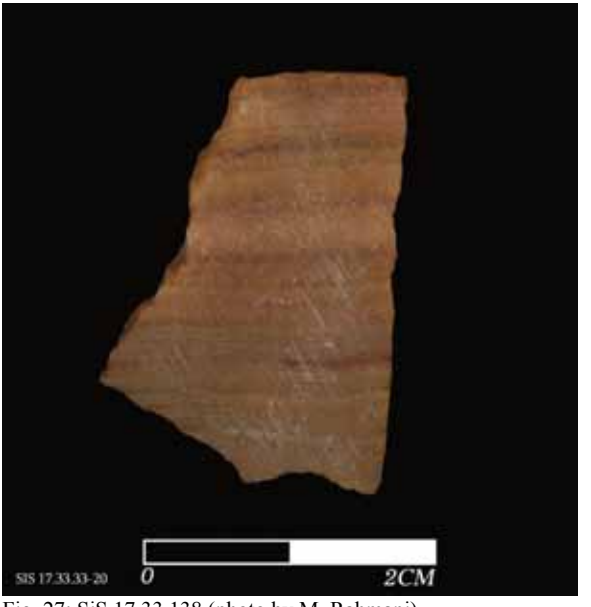

Fig. 27: SiS.17.33.138 (photo by M. Rahmani).

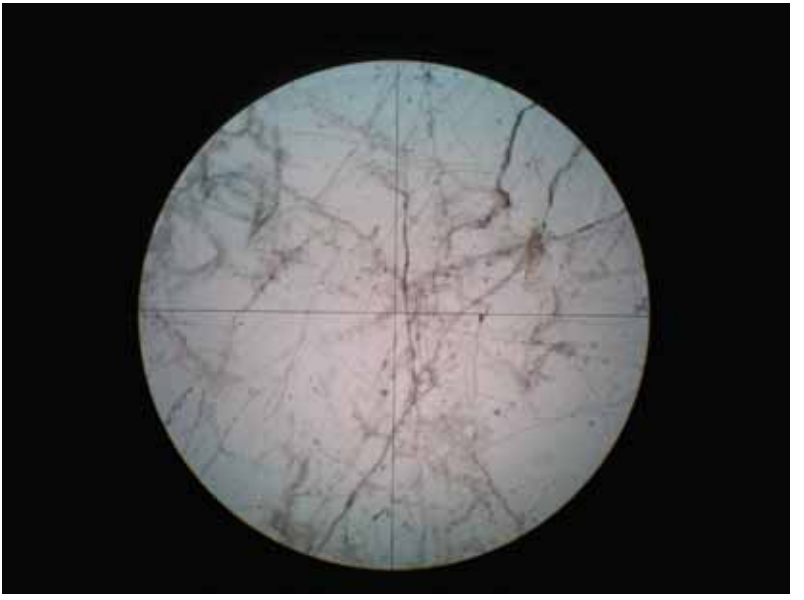

Fig. 28: 50a Radial-columnar texture (linear-polarised light).

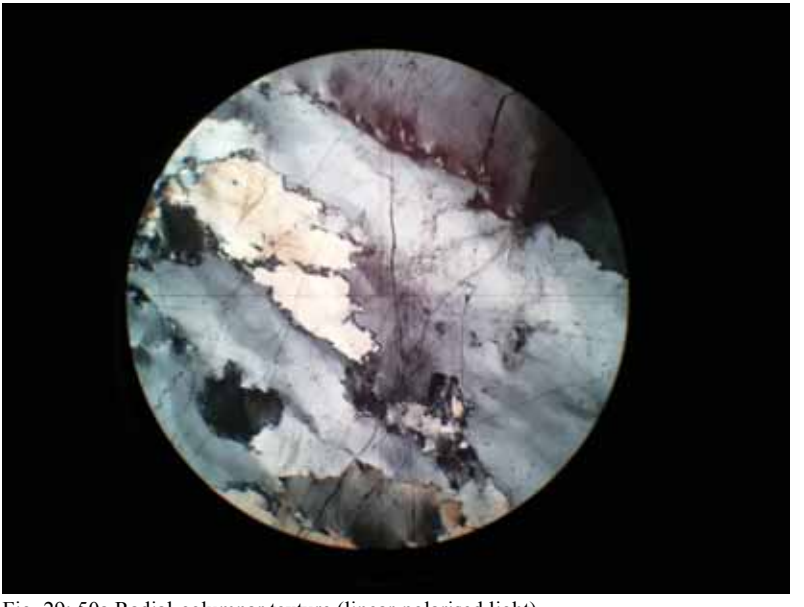

Fig. 29: 50a Radial-columnar texture (linear-polarised light).

Fig. 30: SiS.17.33.52 (Figs. 28-29 sample n°. 50a, 50b). The sample was taken from a calcite pebble from the surface in the area occupied by *Building 33*. Diameter of the photographs 4.5 mm.

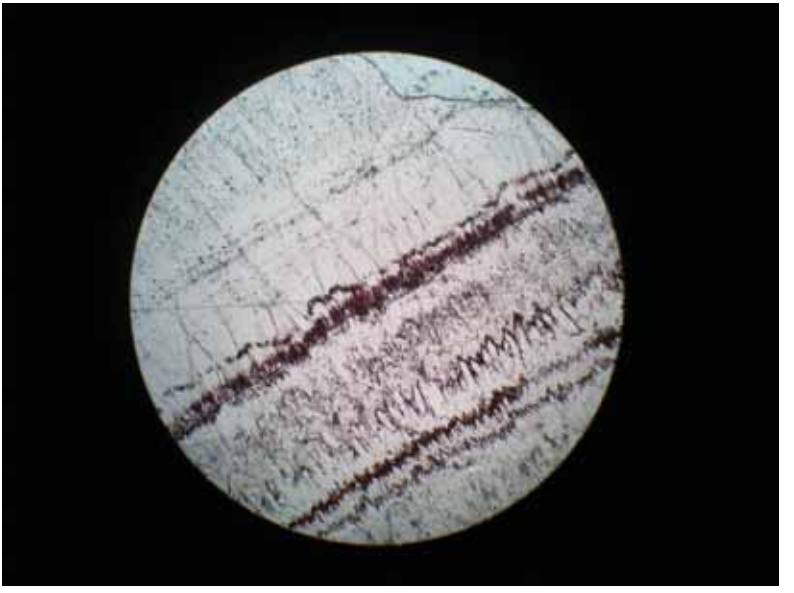

Fig. 31: 53a Radial-columnar texture, (linear-polarised light). SiS.17.33.96. Sample with coloured bands formed of calcite ($CaCO_3$) with radial-columnar and acicular textures alternating with laminae of oxides, probably of iron (Rim). Diameter of the photographs 4.5 mm.

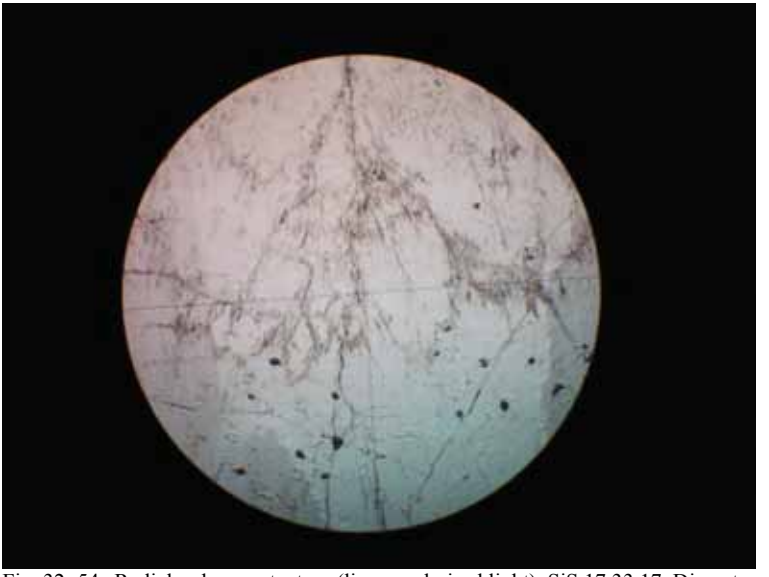

Fig. 32: 54a Radial-columnar texture (linear-polarised light). SiS.17.33.17. Diameter of the photographs 4.5 mm.

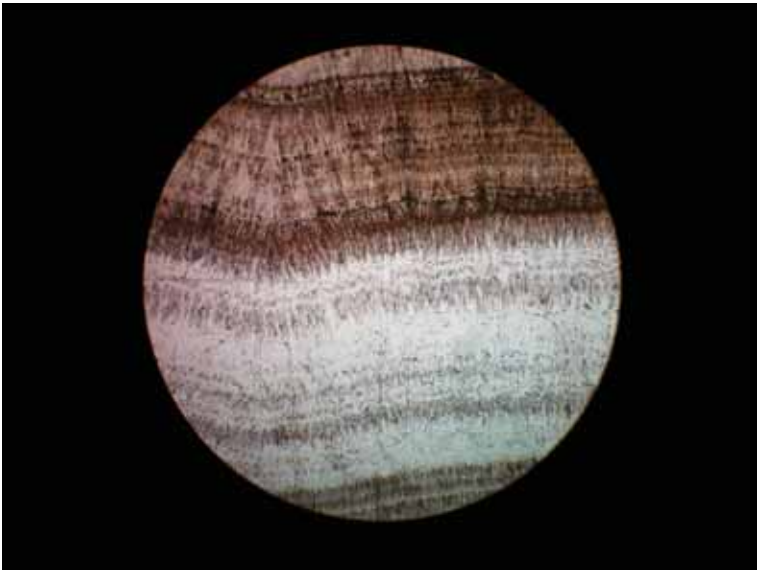

Fig. 33: 54b Radial-acicular texture (cross-polarised light). SiS.17.33.17. Diameter of the photographs 4.5 mm.

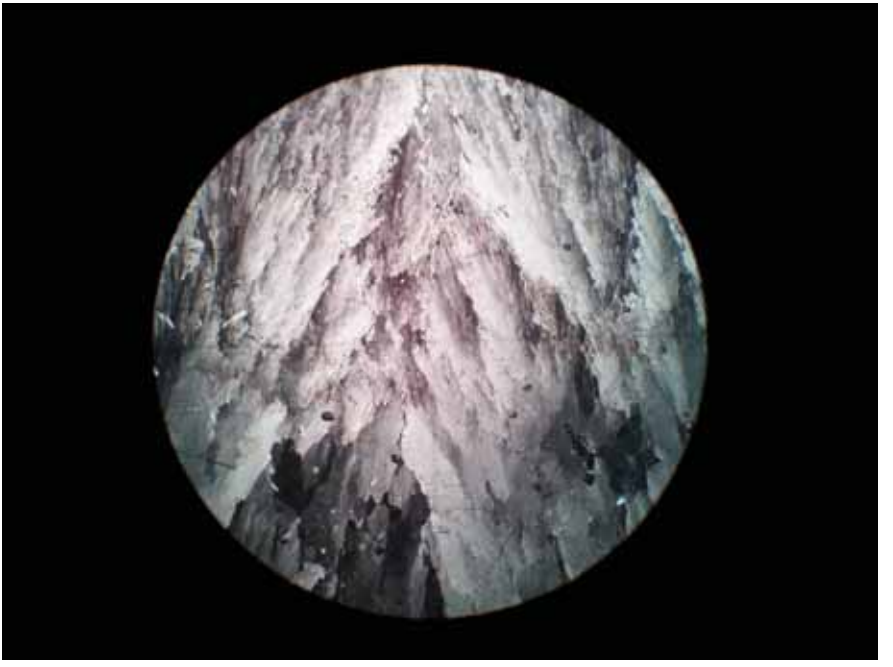

Fig. 34: 54c Radial-columnar texture (cross-polarised light). SiS.17.33.17. Diameter of the photographs 4.5 mm.

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