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<sup>1</sup> Professor, Department of  
Archaeology, Faculty of Art and  
Architecture, Bu-Ali Sina  
University, Hamadan, Iran  
(Corresponding Author)  
E-mail: Me-zarei@Basu.ac.ir


<sup>2</sup> PhD Candidate in Archeology,  
Bu-Ali Sina University,  
Hamadan, Iran.  
E-mail: a.behnia@art.basu.ac.ir

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## RESEARCH ARTICLE

# An Investigation into the Sassanian Glassware Kept in the Sanandaj Archaeological Museum

Mohammad Ebrahim Zarei<sup>1</sup>, Ali Bahnia<sup>2</sup> 

**Abstract:** Glassmaking traces its history back to antiquity as is the case with several other crafts in Iran. The craft would culminate under the Sassanian rule, when an assortment of receptacles in different sizes, shapes, and functions came into popular use. The present study examines a sample of 29 pieces of Sassanian glass objects preserved in the Sanandaj Archaeological Museum. Deriving from clandestine excavations, no previous research has investigated these pieces. This descriptive and historical-analytical study draws upon comparisons with related museum objects and library research. The questions are: Which excavated sites in the Sassanian territory are to be examined for comparanda? What are the manufacturing techniques of the objects in question? To which part of the Sassanian time span do they date? What are the common forms as well as their functions and decorations? The sample appears to compare with the material from Mesopotamia (Tell Mahuz, Abu Skhair, Barghuthiat, and Kish) and Veh Ardashir, which were major centers of glass production at the time. The pieces were manufactured in free-blowing and mold-blowing techniques. Bowls are the common form, followed by bottles, unguentaria, juglets, and jars for ritual, cosmetic, and practical functions. The major decorations detected on the study sample include applied trails and facet cutting. The pieces can be assigned to two consecutive chronological extents: The first spans the onset of the Sassanian period (2nd century AD) to the 4th century AD, and the second encompasses the 4th century AD to the demise of the empire. Dispersion of such objects across the Sassanian Empire suggests that glassware represented a trade item at that time.

**Keywords:** Sanandaj Museum; Sassanian Glassware; Veh Ardashir; Glass Bowl.

## Introduction

The art of glassmaking in Iran has been subject to fluctuations since its inception until the present time because of specific economic, social and political conditions that characterized different periods. Archaeological evidence dates the history of glassmaking in Iran back to the Elam period. From Chogha Zanbil Ziggurat, located 40 km southeast of Susa, comes a number of glass tubes that date between 1265-1345 BC, corresponding to the Middle Elam period (Qa'ini, 2004: 204). A new chapter would dawn in the history of the craft by the rise of the Achaemenian Empire which was associated with exercising a greater authority over different parts of the imperial territory including Syria, Mesopotamia and Egypt. The coeval glass vessels often derive from the royal palaces of Persepolis, which were famous for cut and mold-blown glassware that reflected the contemporary metal vessels. Yet, an important shift occurred in the shaping of molten glass in the first century AD, *viz.* the advent of blowing technique in specialized workshops. Following this tremendous makeover, the glassmaking centers assumed an

independent identity and Iranian glassware founded a new movement in the Orient (Fukai, 1977: 201). The heightened trade contacts with China (the Far East) under the Parthians precipitated a significant advance in glass industry in Iran, but the industry was strongly influenced by Hellenism. However, the rise of the Sassanians was associated with resolute efforts to revive the earlier traditions and to develop an artistic tradition distinct from both the Orient and Occident (Riazi, 2010: 113). The Sassanian times marked the climax of the glassmaking art and the contemporary artisans produced assorted types of vessels in varying sizes, perpetuating the Parthian glassware legacy. Now the related vessels were manufactured for practical, ornamental and ritual purposes in the two free-blowing and mold-blowing techniques. The broad dispersal of glass objects throughout the Sassanian territory evinces that the final products were sent to different parts of the imperial territory, and therefore more likely represented merchandises. Now, the study of 29 vessels from this period at the Sanandaj

Archaeological Museum, so far not covered by any systematic investigation, might shed a light on the movement of these commercial items between Mesopotamia and western Iran as well as their functions, decorative techniques and chronology.

## 2. Research Questions

The present study seeks to answer a number of key questions related to the glass vessels at the Sanandaj Museum: 1) At which Sassanian centers the compranda should be sought? 2) What are the involved manufacturing techniques? 3) What phase in the Sassanian period do they date to? 4) What are the common forms, the decorations and the functions they were intended to serve?

## 3. Research Method

This study is of a descriptive and historical-analytical type. The work proceeded through the following procedures: First, the vessels were examined for their different variables as part of a library research. Then the actual vessels were documented in drawings and photographs after their dimensions were recorded. Finally, quantitative and qualitative

comparisons were made with glass assemblages from systematic excavations.

## 4. Research Background

The Sasanian era is an important period and many researchers have produced books and articles about it (see Benmaran, 2022; Rahbar, 2023; Panjehbashi & Mohazzab Torabi, 2022; Nourallahi, 2022; Roustae Farsi, *et al*, 2022; Maksymiuk, 2021; Matloubkari, & Shaikh Baikloo Islam, 2022; Skupniewicz, 2022; Khanmoradi, *et al*, 2023).

Most remarkable among the recent works on the Sassanian glassware are those by Simpson (2015), Taniichi (2010), and Negro Ponzi (2005). The Sassanian kingdom at its greatest extent encompassed a total area of above 2000 km, stretching from Mesopotamia to Central Asia (Map 1). A large number of glass vessels have come up in the last 150 years from Sassanian points in Iran and Iraq from excavations and in some cases from antiquity markets, with the latter deriving from clandestine excavations. At first, the lack of evidence led scholars to the belief that these objects were produced by Assyrian artisans or in workshops related to the early Islamic

centuries (Layard 1853: 597). Yet, the 1934 excavations in Ctesiphon, the glass finds from Kish (Harden 1934: 124-136) and a large number of hemispherical cut glass bowls published from the Gilan region lent further support to the purported existence of

Ghirshman viewed the glass in the Sassanian period as a “state monopoly” (Ghirshman, 1954: 343). Wenke believed that glass, metal and other crafts were controlled by the state and entailed a large number of specialized artisans, most effective organization of whose operation would be possible only for large urban centers (Wenke, 1987: 256). Lamm credited Jewish itinerant glassmakers with a central role in the spread of the industry in Sassanian Iran (Lamm, 1939: 2596), while others assigned the role to exiled Roman artisans (Fukai, 1960: 126; Harper, 1974; Vonsaldern, 1963: 15). At any rate, on the authority of the cited publications one may place the main glassmaking centers of the Sassanian period in North Mesopotamia and the two centers of Gilan and Mazandaran (northern Iran), and may assert that the industry had apparently transcended to rival goldworking and silverworking (Shepherd,

Sassanian glass industry as an independent art in Iran (Vonsaldern, 1963; Fukai, 1977). This elicited several hypotheses about the manufacturing techniques and centers of the Sassanian glassware, which are outlined in the following.

1986: 1105). A most recently claimed center for glass production is Gilan, the works of which were exported as far as the western Mediterranean Europe and North Africa (Riazi, 2010: 113). Susa is other Iranian key center that reflects ancient Iran and Mesopotamia’s traditions, but it apparently did not contribute noticeably to the Sassanian glasssmithing (Shepherd, 1986: 1105). A further center is Veh Ardashir. The reports on the 1960s and 1970s excavations of the Italian expedition indicate that the production of glass at this center carried on over a long period from the 3rd to the 5th centuries AD (Negro Ponzi, 1966). The cited evidence makes it clear that glass production in the Sassanian period was popular over large parts Iraq. In central and southern Iraq there are ten Sassanian or Sassanian-early Islamic sites with evidence of glassworking. Therefore, it is safe to assume that Mesopotamia represented a main center of

glass manufacturing and glassware use at the time (Nineva: Simpson 2003: 65; Tell Mohammed Arab: Roaf 1984: 142; Tell Mahoz: Negro Ponzi, 1968-71: 2965-377). In the present paper, an attempt is made to examine a collection of unproven glass vessels from the

Sanandaj Archaeological Museum through drawing parallels between their physical characteristics and those of other assemblages discovered in the course of systematic excavations.



Map 1. Map showing the approximate extent of the Sassanian empire and some important sites (*after* Simpson:2015)

## 5. Forms and Decorative Techniques of Sassanian Glassware

Notable among the main forms of Sassanian glass vessels are bowls, stemmed goblets, small bottles and an array of unguentaria, often in brown, green, greenish-yellow, or greenish-blue color resulting from the composition of the constituent raw materials. Frequently,

simple patterned molds were used to produce fairly masterly ornamentations on the surface. Sassanian glassware may bear the following common types of embellishments: 1) trailed threads, on such pieces as unguentaria with constricted necks (Fukai, 1992: 50); 2) warts in the form of larger or smaller protruding knobs arranged regularly or irregularly (Gholizadeh

and Rastakhiz, 2013: 35); 3) patches of glass in different colors, where blue and dark films of glass were applied onto the amber or pale green body, mostly seen on conical rhyta, and as a technique was borrowed from Syria (Aliakbarzadeh Kordmahini, 1993: 50); 4) pinched out fins, attested in the 3<sup>rd</sup> and 4<sup>th</sup> centuries AD (Fukai, 1992: 50), involving wrapping several glass threads of varying colors round a semi-molten body and combing or dragging a tool across the threads to impart a fin-like pattern; 5) prunts or small flat circular blobs fused to the body, a more common tradition on the Sassanian pottery (Aliakbarzadeh Kordmahini, 1992: 28); 6) facet-cuts, in the three forms of linear, circular, and a combination of linear and circular.

Linear facet involves manual creation of straight and curved lines on the glass to produce herringbone patterns (Fukai, 1992: 49). Circular facet is the most common form of cutting carried out on the cooled body, and most frequently occur on bowl forms. Circular facets come in the three varieties of shallow, double, and raised. The combined linear and circular facet-cutting involves horizontal and vertical lines between circles or sometimes

above and below them (Aliakbarzadeh Kordmahini, 1993: 28).

The point of origin of the Sassanian cut glass remains unclear, but its earliest attestations come from Veh Ardashir in the early 4<sup>th</sup> century (Negro Ponzi, 1968: 298).

## 6. Unguentaria

The sample under study here includes 10 instances of these miniature containers, which are examined and compared in four subcategories. They principally served as receptacles for valued materials, such as cosmetics, thus the common designation perfume bottle.

### 6.1. Plain unguentaria

These split into tube and tall-necked (candlestick) varieties. Two examples of plain bottles with a tall neck are present in the Sanandaj sample (Fig. 1: No. 1-2). The examples in this undecorated subgroup have a height varying between 7-10 cm, and show a very bright green, transparent fabric (see Table 1). Such forms occur within the excavated assemblages from Tell Mahuz (Negro Ponzi, 1968: 309), Veh Ardashir (Negro Ponzi, 1984:

171), Abu Habba and Barghuthiat (Negro Ponzi, 1987: 138), and Nineveh (Simpson 2003: 66), generally deriving from domestic and burial contexts.

### 6.2. Plain free-blown unguentarium

There are two types of such containers: one with a tall neck, and the other with a rolled rim. Only a single tall-necked instance (Museum No. 2278) exists in our sample (Fig. 1: no. 3), which is in a light green fabric and 4.9 cm high (Table 1). Examples in this subclass feature a slender neck and a wide lip. The rolled-rim type (Fig. 1: nos. 4 and 5) has a slender neck, a wide, outturned lipped rim, and a globular body. The fabric is dark green. Related material occurs at the Sassanian points of Qasr-i Abu Nasr (Whitcomb, 1985: 143), Nineveh (Simpson 2003: 67), Tell Mohammed Arab (Roaf 1984: 156), Tell Mahuz (Negro Ponzi, 1968: 329), Qal'eh-i Dukhtar (Huff 1987: 303), Kish (Langdon and Harden, 1934: 124-136), and Veh Ardashir (Negro Ponzi, 1984: 170).

### 6.3. Mold-blown ribbed unguentarium

This type comes in the following three subtypes: a) the first has an almost cylindrical

body, a tall ribbed neck, an outturned rim, and is formed of an opaque, dark green fabric (Fig. 1: No. 6). This is reminiscent of a piece from Qaleh Kangelo of Savadkuh, Mazandaran, discovered from Burial No. 2 in the systematic excavation of 2015 (Soortiji, 2011: 83); b) the second, with its characteristic pinched out fins on the inflated body, has a wide mouth, and a long neck (Fig. 1: No. 7). Similar forms with mold-blown ribs are known from the Sassanian sites of Abu Skhair (Negro Ponzi 1972: 217), and Qaleh Kangelo (Soortiji, 2011: 164) (see Table 1). c) The third, candle-stick, type is not represented in the sample under study.

### 6.4. Faceted unguentarium

Geometric facet-cut motifs on vessel's body represent the ornaments most favored by ancient Iranian glassworkers. Relief-cutting was among the Sassanian glassware decorative techniques. The technique also continued into the subsequent Islamic period, though it more frequently occurs on thick glasses. As a quite popular technique in the Sassanian metalworking, it would underlie Iranian art of the Islamic period (Arianpour, 1996: 31). Such



decorations are produced in the following way. First, raised, round appendages arranged in regular intervals in a single or two rows are formed on the target object during the mold-blowing process. Once the resultant piece has cooled and fully solidified, the artisan cut the appendages into circular forms, thereby

embellishing the glassware piece (Karimi, 2001: 35). Our sample contains two instances of unguentaria with facets in relief, one of which also have a rounded base (Fig. 1: No. 8 and 9). The related species find parallels at Qasr-i Abu Nasr (Whitcomb, 1985: 145) (Table 1).



**Fig. 1. Sassanian unguentaria in the Sanandaj Archaeological Museum: 1 and 2) plain; 3-5) plain, free-blown; 6 and 7) ribbed, mold-blown; 8 and 9) relief-faceted.**



Table 1. Specifications of unguentaria at the Sanandaj Archaeological Museum.

No.	Museum No.	Form	Color	Dimensions				Manufacturing technique	Decorations	Relative date	Comparanda
				Height	Mouth dia.	Base dia.	Weight				
1	2263	Tall-neck unguentarium	Light green, transparent	8.1 cm	2.4 cm	4 cm	5.1 gr	Free-blown	plain	3 <sup>rd</sup> -4 <sup>th</sup> centuries	Negro Ponzi 1984: fig. 1.9, 19, 18, 20 Veh Ardashir
2	2264	Tall-neck unguentarium	Light green, transparent	9.9 cm	2.5 cm	2.8 cm	51.5 gr	Free-blown	plain	3 <sup>rd</sup> -4 <sup>th</sup> centuries	Negro Ponzi 1968: fig. 153 Tell Mahuz
3	2278	Tall-neck unguentarium	Light green	4.9 cm	2 cm	0.6 cm	13.5 gr	Free-blown	plain	3 <sup>rd</sup> -4 <sup>th</sup> centuries	Whithcom 1985: fig. 58: a, b, d Qasr-i Abu Nasr
4	2277	Necked unguentarium with folded rim	Light green	4.9 cm	1.8 cm	0.6 cm	10.8 gr	Free-blown	plain	3 <sup>rd</sup> -4 <sup>th</sup> centuries	Negro Ponzi 1972: fig. 20. 10-11 Abu Skhair
5	2271	Necked unguentarium with folded rim	Green, opaque	5.5 cm	2.6 cm	1 cm	35.5 gr	Free-blown	plain	5 <sup>th</sup> -6 <sup>th</sup> centuries	Negro Ponzi 1984: fig. 1.10 Veh Ardashir
6	2231	Unguentarium	Dark green, opaque	4.7 cm	1.4 cm	1.2 cm	23.4 gr	Mold-blown	plain	5 <sup>th</sup> centuries	Soortiji 2011: fig. 7 Qalekh Kangelo
7	2270	Unguentarium	Dark green, opaque	7 cm	3 cm	2.4 cm	41.6 gr	Mold-blown	Pinched fins	5 <sup>th</sup> -6 <sup>th</sup> centuries	Negro Ponzi 1972: fig. 22.46, 21.25 Abu Skhair
8	2261	Unguentarium	Light green, transparent	6.9 cm	1.6 cm	2.4 cm	58.7 gr	Mold-blown	Relief cut	6 <sup>th</sup> -7 <sup>th</sup> centuries	Whithcom 1985: figs. 58-59 Qasr-i Abu Nasr
9	2262	Unguentarium	Purplish brown	6.6 cm	1.8 cm	2.6 cm	42.7 gr	Mold-blown	Relief cut	6 <sup>th</sup> -7 <sup>th</sup> centuries	Whithcom 1985: figs. 58-59 Qasr-i Abu Nasr

## 7. Bowl

Some 13 vessels represent the bowl form in the sample. Analyses and comparisons with the

excavated pieces have distinguished between 7 different subtypes.

### 7.1. Plain free-blown bowl with vertical rim

Three represented examples lack decoration and are in a dark green and brown fabric (Fig. 1: Nos. 2 and 3). Comparable excavated forms are published from Veh Ardashir (Negro Ponzim 1984: 171) and Barghuthiat (Negro Ponzim 1987: 318-381) (Table 2).

## 7.2. Hemispherical facet-cut bowl

This type in a light green glass bears deep facet-cut decorations (Fig. 2: No. 4), which are the prevalent ornaments on Sassanian cut glass bowls. The technique is also known as thumb cutting, in which the artisan roughs out several rows of marked patterns on the body with a wide stone before grinding them to create a series of small sunken circles that will appear as a honeycomb or a tortoise-shell design (Whitehouse 2005: 204). The cut patterns at times are oval in shape (Aliakbarzadeh Kordmahinim 1993: 27).

## 7.3. Pedestal bowl with facet cut protruding knobs

There are two such bowls in the study sample, made of a dark and light green glass. Mouth diameter varies between 8-10 cm and the height between 8-9 cm. The decoration

consists of relief faceting, typically found on thick glasses in Iran. A wide, slightly incurving rim tops the hemispherical walls that rest on a small foot (Fig. 5: Nos. 2 and 6). Most probably, they were shaped through free-blowing before the facet-cut decorations were mold-blown on them. The fabric contains a lot of bubbles (Fukai, 1992: 49). Generally they date to the 6th-7th centuries judging from comparanda in excavated assemblages. A related vessel comes from the Ōkunoshima island in the Inland Sea of Japan (Fukai, 1968: 78) (Table 2), and there are other unpronounced instances (Simpson, 2015: 93).

## 7.4. Pedestal deep bowl with vertical grooves (fluting)

These bowls show ribbed flutings worked out with a grinding stone on the free-blown body. This technique is similar to pottery carving (Fukai, 1992: 49). The example in our sample has a base 8 cm in diameter and 3.3 cm in height. The total height of the bowl is 9.3 cm, and the fabric is a dark green glass (Fig. 2: No. 7). The piece compares with excavated examples from Veh Ardashir (Negro Ponzi, 1984: 168).

### 7.5. Footed and unfooted bowls with pinched out fins

Having its roots in Egypt and Phoenicia, this type of ornamentation is implemented on the cooled glass. The technique characterizes the glassware of the 3rd and 4th centuries AD in Iran (Fukai, 1992: 51), where it came to the fore in the Islamic period and apparently persisted until the 12th century AD (Qolizadeh and Rastakhiz, 2013: 36). Our sample includes three of such bowls, with a diameter ranging from 9.5 to 11 cm (Table 2). These footed and unfooted bowls were made of a light green, transparent glass (Fig. 8: Nos. 2 and 9). One has a round base with a diameter of about 2.6 cm. The vessel's form is slightly slanted (Fig. 2: No. 10).

### 7.6. Plain pedestal bowl

This bowl is made of a brown glass. The base is 1.9 cm in diameter and 2.2 cm in height. The vessel lacks any decorations, and the pedestal base completely adjoins the body (Fig. 2: No. 11).

### 7.7. Bowl with diagonally ribbed body

This bowl form has a slightly outturned rim, which is smooth in the upper part. The decorations are of linear facet-cut type (Aliakbarzadeh Kordmahini, 28:1372). In addition to a trailing near the rim's base, diagonal/spiral ribs cover the entire body (Fig. 2: Nos. 12 and 13). The fabric is bright green and transparent (Table 2).



**Fig. 2. Sassanian bowls at the Sanandaj Archaeological Museum: 1-3) plain, free-blown, with vertical rims; 4) hemispherical, facet-cut; 5-6) pedestal-based, facet-cut protruding knobs; 7) pedestal deep bowl, vertical grooves (fluting); 8-10) pinched out fins; 11) plain pedestal-based; 12-13) diagonally ribbed body**

**Table 2. Specifications of glass bowls from the Sanandaj Archaeological Museum**

No.	Museum No.	Form	Color	Dimensions				Technique	Decorations	Relative date	Comparanda
				Height	Mouth dia.	base dia.	weight				
1	2083	Bowl	Dark green, opaque	3.7 cm	9 cm	9/16 cm	89 gr	Free-blown	-	5 <sup>th</sup> -6 <sup>th</sup> centuries AD	Simpson 2014: fig. 9.6 Barghuthiat
2	2269	Bowl	Dark green, opaque	5.6 cm	10 cm	10/16 cm	293 gr	Free-blown	-	5 <sup>th</sup> -6 <sup>th</sup> centuries AD	Negro Pohnzi 1987: fig. 1.9,23,18,24 Barghuthiat
3	2276	Bowl	Brown	5.5 cm	10 cm	9/16 cm	170 gr	Free-blown	-	5 <sup>th</sup> -6 <sup>th</sup> centuries AD	Negro Pohnzi, 1984: fig. A-318.381 Veh Ardashir
4	2284	Bowl	Light green	8.3 cm	9.4 cm	10/16 cm	235 gr	Mold-blown	faceting (deep)	6 <sup>th</sup> -7 <sup>th</sup> centuries AD	Boucharlat and Lecomte 1987: pl. 99.9 Tureng Tepe
5	2258	Bowl	Dark green	8 cm	8.8 cm	10/16 cm	146 gr	Mold-blown	relief facete	6 <sup>th</sup> -7 <sup>th</sup> centuries AD	Fukai 1968: fig. 24 Okunoshima island
6	2260	Bowl	Light green	9.8 cm	10 cm	10/16 cm	296 gr	Mold-blown	relief facet	6 <sup>th</sup> -7 <sup>th</sup> centuries AD	unprovenanced
7	2285	Pedestal bowl	Dark green	9.3 cm	15.5 cm	10/16 cm	331 gr	Mold-blown	ribbing	-	Negro Ponzi 1984: fig. 2.9,3.6-7 Veh Ardashir
8	2237	Bowl	Green, transparent	6.6 cm	9.6 cm	10/16 cm	151 gr	Mold-blown	pilan, pinched out fin	3rd-4 <sup>th</sup> centuries AD	Langdon and Harden 1934: fig. 4,5 Kish
9	2295	Bowl	Light green	5.7 cm	11.4 cm	10/16 cm	144 gr	Mold-blown	plain, pinched out fins	3rd-4 <sup>th</sup> centuries AD	Negro Ponzi 1984: figs. 2.8,3.3-11 Veh Ardashir
10	2283	Bowl	Green, transparent	9 cm	9.8 cm	10/16 cm	200 gr	Mold-blown	pinched out fins	3rd-4 <sup>th</sup> centuries AD	-
11	2286	Pedestal bowl	brown	7.2 cm	11.2 cm	9/16 cm	268 gr	Mold-blown	-	-	-
12	2287	Bowl	Light green	6.8 cm	10 cm	10/16 cm	174 gr	Mold-blown	diagonal ribbing	-	Huff 1987: 143, abb. 20-23

											Qal'eh-i Dukhtar, Firuzabad
13	2288	Bowl	Brown	6.3 cm	10.8 cm	9 cm	119 gr	Mold-blown	diagonal ribbing	-	Huff 1987: 143, abb. 20-23 Qal'eh-i Dukhtar, Firuzabad

## 8. Jar

Only a single example of the jar form has been examined as part of the present study. It has a thin trailed handle on the body.

The vessel is made of a dark green glass and lacks any sort of ornaments. A trailed handle connects the body to the rim. The latter is thick and outturned (Fig. 3). Related forms occur among the excavated assemblages from Kish (Langdon and Harden 1934: 124) and Gilan (Fukai, 1992: 137) (Table 3).

### 8.1. Jar with a tall neck and a thin handle



Fig. 3. Long-necked jar with a handle, Museum No. 2280

Table 3. Specifications of the glass jar in the Sanandaj Archaeological Museum

No.	Museum No.	Form	Color	Dimensions				Technique	Decorations	Relative date	Comparanda
				Height	Mouth dia.	Base dia.	Weight				
1	2280	Tall-necked jar	Light green, transparent	12.2 cm	4.4 cm	6.4 cm	134 gr	Free-blown	Thin handle	5-7 <sup>th</sup> centuries AD	Langdon and Harden 1934: fig. 4.38 Kish Fukai 1992: 146 Gilan

## 9. Juglet

This group of pouring glass vessels split into the two handled and handleless subcategories. The handled variety usually has a spherical body, a cylindrical neck, and an outturned rim. The handle is applied. The sample under study only contains a single species of this vessel, which is footed and bears parallel trailed bands on the body.

### 9-1. Juglet with trailed ribs and a thin handle

The decorations on this receptacle are linear face-cuts in two rows, and the slightly outturned rim has a smooth upper part (Aliakbarzadeh Kordmahini 1993: 28). The fabric is dark green, and the vessel's foot is 4.5 cm in diameter (Fig. 4). A related piece is known from a Sassanian site in Syria (Qa'ini 2004: 77) (Table 4).



Fig. 4. Footed juglet with trailed ribbing, museum no. 2251

Table 4. Specifications of the glass juglet at the Sanandaj Archaeological Museum

No.	Museum No.	Form	Color	Dimensions				Technique	Decorations	Relative date	Comparanda
				Height	Mouth dia.	Base dia.	Weight				
1	2251	tall-necked jar	dark green	15.2 cm	3.2 cm	5.4 cm	269 gr	free-blown	ribbing	-	Qa'ini 2004: 77 Syria

## 10. Bottle

A plethora of glass bottle forms have been recovered with diverse functions. Bottles' most common use is for storing liquids over a long period. Based on their size and function, they take different shapes. Such vessels in varying forms and decorations were made in the Sassanian period. The collections of the Sanandaj Museum contain 5 examples of this type, which include both handled and handleless varieties, embellished with facets and pinched out fins

#### **10.1. Cylindrical bottle with facets**

There are two bottles with this type of decoration as overlapping facets. They are made from a light green (olive) glass and presumably served as cosmetic containers. The neck is long and the body has a cubic profile (Fig. 5: Nos. 1 and 2). The perpetuation of this glassware type is frequently seen in the Islamic period, most notably in the early centuries

(Kroger, 1984: 177). The vessels are 11 cm high and have a mouth diameter of 2.4 cm (Table 5).

#### **10.2. Pear-shaped bottle with constricted neck**

Made from a transparent white glass, the vessel has a diameter of 1.8 cm at the mouth (Fig. 5: No. 3; Table 5). The decoration consists of pinched out fins at almost regular intervals. A related piece is reported from Tell Mahuz (Negro Ponzi, 1968: 344).

#### **10.3. Plain handled bottle**

This mold-blown type of container has taken a bottle form by the handle applied to its body. The neck is long, the handle is typically thin, and the fabric is opaque green (Fig. 5: Nos. 4 and 5). Comparisons deriving from several other excavated sites suggest this as a common form in Mesopotamia (Mahuz) and Iran (Veh Ardashir) (Negro Ponzi, 1968; 1984: 345).





Fig. 5. Sassanian bottles at the Sanandaj Archaeological Museum: 1 and 2) cylindrical, with shallow faceting; 3) pear-shaped, with constricted neck; 4 and 5) plain, handled

Table 5. Specifications of glass bottles at the Sanandaj Archaeological Museum

No.	Museum No.	Form	Color	Dimensions				Technique	Decorations	Relative date	Comparanda
				Height	Mouth dia.	Base dia.	Weight				
1	2266	Bottle	Olive green	11.3 cm	2.4 cm	1.4 cm	46.3 gr	Mold-blown	Shallow faceting	3 <sup>rd</sup> -4 <sup>th</sup> centuries AD	Langdon and Harden1934: fig. 4.5: nos. 34-35 Kish
2	2265	Bottle	Olive green	11.7 cm	2.4 cm	1.6 cm	8.2 gr	Mold-blown	Shallow faceting	3 <sup>rd</sup> -4 <sup>th</sup> centuries AD	Langdon and Harden1934: fig. 4.5: nos. 34-35 Kish
3	2267	Bottle	White, transparent	5.9 cm	1.8 cm	0.9 cm	19.2 gr	Mold-blown	Pinched out fins	-	Negro Ponzi 1968: fig. 156: nos. 51-53 Tell Mahuz
4	2272	Bottle	Dark green	7.9 cm	2.6 cm	2.2 cm	65.1 gr	Mold-blown	Handled	-	Negro Ponzi 1968-71: fig. 146: nos. 57-59 Tell Mahuz
5	2282	Bottle	Dark green	13.4 cm	6.6 cm	5.4 cm	266 gr	Mold-blown	Handled	-	Negro Ponzi1984: fig. 2: nos. 20-22 Veh Ardashir

## 11. Discussion and Analysis

During the last half-century, Sassanian Iran represented a distinct glassmaking center for

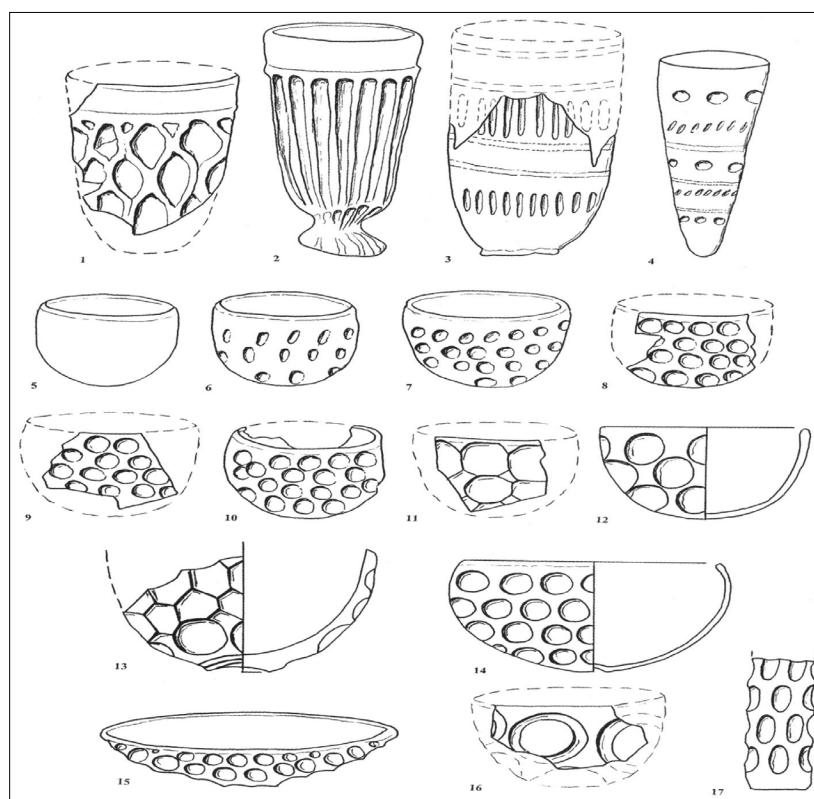
scholars. Notwithstanding this art market-induced presumption, later surveys and excavations revealed that it was not the Iranian

highlands but the Mesopotamian lowlands that had served as the veritable center for the craft. Archeological surveys provided evidence for the forming and finishing of glassware on a large scale in central and southern Iraq, and therefore the latter regions housed the largest related sites with considerable extents (Simpson, 2015: 79). In addition to Mesopotamia, glassmaking was also a common practice in the two Iranian regions of Gilan and Mazandaran, comparanda from which have been drawn in the present paper (Table 3). Instead of being a production center for glass and glass items, Gilan was a center for the use of such products, and in the Middle Ages its reputation mainly came from providing the local soldiers with glassware rather than manufacturing such items. The glass objects purportedly found there are seemingly imports from other regions. Now the question arise as: If these glass objects did not derive from the Iranian plateau or Mesopotamia, where was their origin? The nearest and most accessible region in this regard is South Caucasia (Fig. 6). Apart from the two mentioned regions, in light of the excavations in Caucasia, the region assumed a particular status as regards the

production and use of glassware in the Sassanian period, mainly thanks to its contacts with its western neighbors and also its location at the confluence of cultural contacts and ties between the Sassanian and Roman worlds. Susa and Veh Ardashir were other supposed centers of glass production in the Sassanian period. On the basis of the above observations and our enquiries, glass production in the Sassanian period prevailed over large parts of central and southern Iraq, where ten Sassanian or Sassanian-post-Sassanian glassworking sites have been recorded. It is safe then to describe Mesopotamia as one of the chief centers of glassware production as well as use in the Sassanian period. Comparisons between the studied sample of glass vessels with the material from the major Sassanian sites, including Nineveh (Simpson 2003: 67), Tell Mohammed Arab (Roaf, 1984: 156), Barghuthiat (Negro Ponzi, 1987: 318), Abu Skhair (Negro Ponzi, 1972: 217), Kish (Langdon and Harden 1934: 124), Qasr-i Abu Nasr (Whitcomb 1985: 145), Veh Ardashir (Negro Ponzi, 1984: 171), Qal'eh-i Dukhtar (Huff, 1987: 302) and Tell Mahuz (Negro Ponzi, 1968: 321) pointed to the fact that glass

vessels were trade items that were in circulation throughout the Sassanian territory and even beyond it (Table 2) as far east as the Ōkunoshima island in Japan (Fukai, 1968: 74). Sassanian glassmaking industry shows a great diversity in form, fabric and manufacturing process and this very fact qualifies it as a completely distinct local industry.

Archaeological investigations have shown that the development and further growth of the craft rested on local resources. The Sassanian glassmaking tremendously informed the industry in the ensuing early Islamic centuries, not only in the applied compositions, but also in the continuation of the style of deep molds and the tendency for heavy cuts.



**Fig. 6. Sassanian glass vessels excavated in South Caucasia (scales differ): 1-2) small bowl with mold-blown decorations; 3-4) deep small bowls with shallow facets; 5) plain hemispherical bowl; 6-14) hemispherical bowls with detached or overlying circular facets; 15) shallow bowl with densely set circular facets; 16) deep hemispherical broken footed bowl with double-circular facets; 17) broken tube with rows of oval facets (Simpson, 2015: 79)**

## 12. Conclusion

The parallels drawn in the present paper between the Sassanian glass vessels stored at the Sassanian Archaeological Museum and the excavated assemblages from the concomitant sites showed that the vessels in question were apparently manufactured in two separate timespans: one spanning the establishment of the Sassanian empire (2nd century AD) to the 4th century AD, and the second the 4th century AD to the demise of the dynasty. Also, the objects were found to morphologically fall in the five general forms of unguentarium (miniature perfume containers), bowl (goblet or stemmed cup), jar, juglet, and bottle. They were fashioned and finished through the free- and mold-blowing techniques, and the recorded embellishments were shallow facets, relief facets, pinched out fins, and trailing. A most fashionable decoration on Sassanian glassware, also attested in the sample considered here, is the facets cut in relief, which also continued in use in the subsequent Islamic centuries. The technique tended to be applied to thick glasses, and was also common in metalworking. Yet, it is noteworthy that it was shallow geometric facets that represented

the most favored technique in Iranian glassmaking. Results of our analyses of the concerned sample and compranda drawn from the systematically excavated contexts show the glass vessels mainly served funerary, ritual and cosmetic functions. Therefore, at that time the glass craft had seemingly overshadowed other major fields of art such as silversmithing. Sassanian glasses significantly influenced the industry in the following centuries, a claim corroborated with the continued use of deep molds and the tendency towards deep cuts, although novel molds would emerge afterwards.

The finds from the present study suggest that glassware in the Sassanian period was not produced to strict standards, so that certain categories of objects recovered in substantial quantities reflect mass production, while others were less common. Sassanian glass pieces were mainly deposited in graves. The claim is corroborated by the excavated cemeteries at such sites as Tell Mahuz and Abu Skhair that have produced assemblages of glass vessels mainly occur in miniature oil bottles and canteens, identical to those considered here from the Sanandaj museum (Fig. 1: Nos.

1-9). And, demanding forms that required a lot of time and energy are absent from the Mesopotamian graves, but hundreds of complete examples of them exist in the antique market (reported by the Japanese expedition to the Dailaman region of Gilan) and in different localities, exemplified by the unprovenanced

bowls, jars and bottles of the Sanandaj Archeology Museum (Figs. 2-5). It follows that Iran and its burial contexts might be a probable origin of the pieces circulating in the art market. A case in point is the glass objects excavated from Qaleh Kangelo.

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## پژوهشی در آبگینه‌های دوره ساسانی موزه باستان‌شناسی سنندج



محدابراهیم زارعی<sup>۱</sup>، علی بهنیا<sup>۲</sup>

### چکیده:

شیشه‌گری همانند دیگر هنرهای دستی در ایران به دوران پیش از میلاد بازمی‌گردد. در دوره ساسانی این صنعت به اوج خود رسید و تولید گونه‌های مختلف ظروف با ابعاد، شکل‌ها، اندازه‌های متفاوت و با کاربری‌های متنوع رواج یافت. در پژوهش انجام پذیرفته تعداد ۲۹ قطعه از ظروف شیشه‌ای دوران ساسانی موزه باستان‌شناسی سنندج مورد مطالعه قرار گرفته که از حفاری‌های غیرمجاز به‌دست آمده و تاکنون پژوهشی روی آنها انجام نگرفته است. روش پژوهش در این نوشتار به‌صورت توصیفی، تاریخی-تحلیلی و براساس مقایسه با اشیاء موزه‌ای و مطالعات کتابخانه‌ای است. سؤالات پژوهش عبارت‌اند از اینکه؛ اشیاء مورد مطالعه قابل مقایسه با کدام محوطه‌های مورد کاوش‌های در قلمرو دوران ساسانی هستند؟ روش ساخت اشیاء مذکور چیست؟ ساخت اشیاء مورد مطالعه به چه بازه زمانی از دوران ساسانی برمی‌گردد؟ گونه‌ها و اشکال رایج ظروف مورد مطالعه در این نوشتار کدام‌اند و چه نوع کاربری و تزئیناتی داشته‌اند؟ به‌نظر می‌رسد آثار مورد مطالعه بیشتر با نمونه‌های به‌دست آمده از محوطه‌های بین‌النهرین (تل ماهوز، ابوسخیر، برقویات و کیش) و وه اردشیر که از مراکز مهم تولید شیشه در دوره ساسانی هستند قابل مقایسه است. فناوری ساخت و تولید اشیاء مورد مطالعه با روش دمیده آزاد و دمیده در قالب بوده و شکل ظروف اغلب به‌صورت کاسه در کنار سایر شکل‌های بطری، روغن‌دان، پارچ و کوزه با کاربری‌های آیینی، آرایشی و مصرفی وجود داشته و از تزیینات مهم ظروف مورد مطالعه تراش سطحی برجسته است. با مطالعه ظروف شیشه‌ای موزه سنندج می‌توان اشیاء را در دو بازه زمانی تاریخ‌گذاری کرد، دوره اول از آغاز دوره ساسانی (قرن دوم میلادی) تا قرن چهارم میلادی و دوره دوم از قرن ۴ میلادی تا اواخر دوره ساسانی، پراکنش اشیاء شیشه‌ای در قلمرو ساسانی نشان می‌دهد که آبگینه در آن دوران بیشتر به‌عنوان یک کالای تجاری بوده است.

واژه‌های کلیدی: بین‌النهرین، موزه سنندج، آبگینه‌های دوره ساسانی، وه اردشیر، کاسه شیشه‌ای

<sup>۱</sup> استاد گروه باستان‌شناسی دانشکده هنر و معماری، دانشگاه بوعلی سینا، همدان، ایران (نویسنده مسئول)

E-mail: Me-zarei@Basu.ac.ir

<sup>۲</sup> دانشجوی دکتری گروه باستان‌شناسی دانشکده هنر و معماری، دانشگاه بوعلی سینا، همدان، ایران.

E-mail: a.behnia@art.basu.ac.ir