

Medieval mosque lamps from Ostrów Tumski (Cathedral Island) in Wrocław and Opole–Ostrówek¹

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A fragment of a 13th–14th century painted mosque lamp was identified in the collection of archaeological glass from Ostrów Tumski in Wrocław, held by the Institute of Archaeology and Ethnology of the Polish Academy of Sciences (Research Centre on Late Antique Culture and the Early Middle Ages). An analysis of glass chemical composition as well as the decoration of this fragment showed that it was made of sodic-calcic-silica glass, and that part of the ornament covering it was finished with gold. A comparative study indicated that the artifact had been made in the Middle East, most likely in a glass workshop in Syria or Egypt. Another example of this type of Islamic glass was discovered in Poland during the excavation in the 1930s of Ostrówek in Opole. Large fragments of a painted glass bowl were found there and identified as a mosque lamp. Since then the object has been lost. The fragments of glass mosque lamps from Wrocław–Ostrów Tumski and Opole–Ostrówek will be discussed here in the context of basic raw material studies and chemical composition analyses.

KEY-WORDS: medieval glass, Islamic glass, mosque lamps, enamels, Wrocław–Ostrów Tumski, Opole–Ostrówek, residential centres, Silesia, Middle Ages

INTRODUCTION

Excavations of medieval towns and strongholds, and especially residential centres often unearth a significant number of artifacts of an elitist nature beside extensive bulk material and architectural remains. These include elements of weaponry, jewellery, figural art, exquisite clothes, ornate stove tiles, metal vessels, luxury pottery, game pieces and all kinds of other goods unavailable to the general population. Glass and

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glazed products, especially those decorated with enamel, from both the early and the late Middle Ages should also be placed in this group. Decorated glass artifacts were extremely luxurious and valuable commodities at that time in Central Europe². Possession of such items signified a comfortable lifestyle, emphasizing the wealthy status of the individual (see Piekalski 2008; Piekalski and Wachowski 2009).

Medieval enamelled glass belongs to a class of exceptional and particularly rare finds in Poland. Islamic mosque lamps are special in this group. The article presents a comprehensive description of fragments of glass mosque lamps from Wrocław–Ostrów Tumski and Opole–Ostrówek, in terms of both basic raw material studies and chemical composition analyses.

WROCLAW–OSTRÓW TUMSKI

A fragment of a vessel of undoubtedly elitist character was found in 1952 on Ostrów Tumski (Cathedral Island) in Wrocław, during excavations carried out by the former Institute of the History of Material Culture of the Polish Academy of Sciences (Kočka and Ostrowska, 1953; 1955), in trench VI located on Katedralna Street, in the late medieval layer No. 3. It was a small fragment of the body of a vessel crafted in the free blowing technique (?), made of transparent glass of a lemon–honey colour (Fig. 1). Air bubbles are to be observed within the wall, which is 2.7–3.6 mm thick. The outer side is decorated with motifs of circles and palmettes, rendered in brown-red, white and gold enamel.

This is not the only find of its kind from Wrocław's Cathedral Island. A team of researchers from the Chair of Archaeology, University of Wrocław, discovered in 1972, in the neighbouring trench I/72, in layer D dated to the mid-13th century, a fragment of a glass vessel, most likely a bowl, made of transparent glass of sapphire colour (Kaźmierczyk *et al.* 1974: 260–264). This fragment was painted with an ornamental pattern that was gilded, the bright gilding surviving on the surface in the form of small scales (Kaźmierczyk *et al.* 1974: 262, Fig. 9: e). The decoration of circles, floral motifs and possibly a fragment of an inscription (?) is consistent in terms of style with the decoration of the vessel from trench VI. Spectrographic analyses³ of the glass of this fragment carried out in the 1970s showed that it was made of sodic-lead glass (Kaźmierczyk *et al.* 1974: 264, 271).

Neither style nor type of glass matches these vessels to the production of medieval workshops in central Europe. However, this kind of decoration was widely used both on pottery vessels (see Nawrońska 2002: 272, Fig. 1; Miazga 2009: 254–256, Figs. 2 and 3)

² According to 10th-century Arab sources, a single glass bead of green colour bought by Rus' merchants had the value of one dirham (Lewicki 1953: 118). Early medieval glass beads, as well as rings made of this material could have functioned as a non-monetary currency (Kurasiński and Skóra 2012: 77).

³ Carried out by Dr. A. Idzikowski from Wrocław University of Technology (Kaźmierczyk *et al.* 1974: 264).



Fig. 1. Fragment of a mosque lamp from Wrocław–Ostrów Tumski, Inv. No. 2779/52. Photo by S. Siemianowska

and on glass vessels (see Goldstein *et al.* 2005: exhibits 308 and 311–312; Jenkins 1986: 38–45; Carboni 2001: 232, 235), in Islamic countries, the Byzantine Empire and the Arab caliphates in Western Europe⁴. Taking into account the colour of the glass, the style of the decoration, and the wall thickness and profile, we are dealing here most likely with bowl-shaped or jug-shaped lamps, fragments of which are fairly frequent finds in museum collections and during excavations in Europe. Such vessels are known, among others, from Ulm in Baden-Württemberg, the monasteries Farfe in Italy and Perpignan in France (Gross 2012: 51), the Old Town in Kiel⁵ and the stronghold in Opole–Ostrówek (Hołubowicz 1956: 251, Fig. 101).

OPOLE–OSTRÓWEK

The Wrocław artifacts are not the only examples of Islamic lamps discovered in Poland. Fragments of a glass bowl (Fig. 2), which may also be associated with this category of artifacts, were found during excavations of the Ostrówek in Opole in the 1930s. The bowl has been published, starting with the original report from G. Raschke's excavations in 1930–1931 (Raschke 1938), through W. Hołubowicz's works on the history of Opole from the 10th to the 12th century (Hołubowicz 1956: 251, Fig. 101), to M. Deka's publication (Dekówna 1962). Maria Deka in her article on glass imports in early medieval Poland noted that the stylized Arabic writing placed on the bowl is typical of 11th–13th-century pottery products from Muslim countries in the Middle East, while its decoration is typical of mosque lamps (Fig. 2: c, d) (Dekówna 1962: 242). The early publications did not contain a detailed description, while the artifact itself was lost, most probably during World War II. The inscription on the lamp was deciphered recently in part. Kadir Pektas-Medeniyet from the University of Istanbul pointed out that only part of the inscription is legible and that it means: 'Mewla is the sultan'. According to Turkish scholars, an analogous lamp dated to the 15th century is in collection of the Mevlana Museum of Konya. The inscription reads 'Izzunli Mevlana is the sultan of el Melik'⁶.

CHEMICAL COMPOSITION

The chemical composition of the glass of the fragment from Wrocław–Ostrów Tumski (Fig. 1)⁷ as well as the enamel adorning it was undertaken with X-ray analysis

⁴ For enamelled Islamic glass, see, e.g., Carboni 2001.

⁵ Personal communication of Dr. P. Steppuhn, to whom we are very grateful.

⁶ I would like to thank the scholars for the opportunity to consult with them and for the translation.

⁷ Analyses costs were covered from the funds of the grant *Adulescentia est tempus discendi*. ATD-Nr 9 /MNiSW/ATD/M/2012.

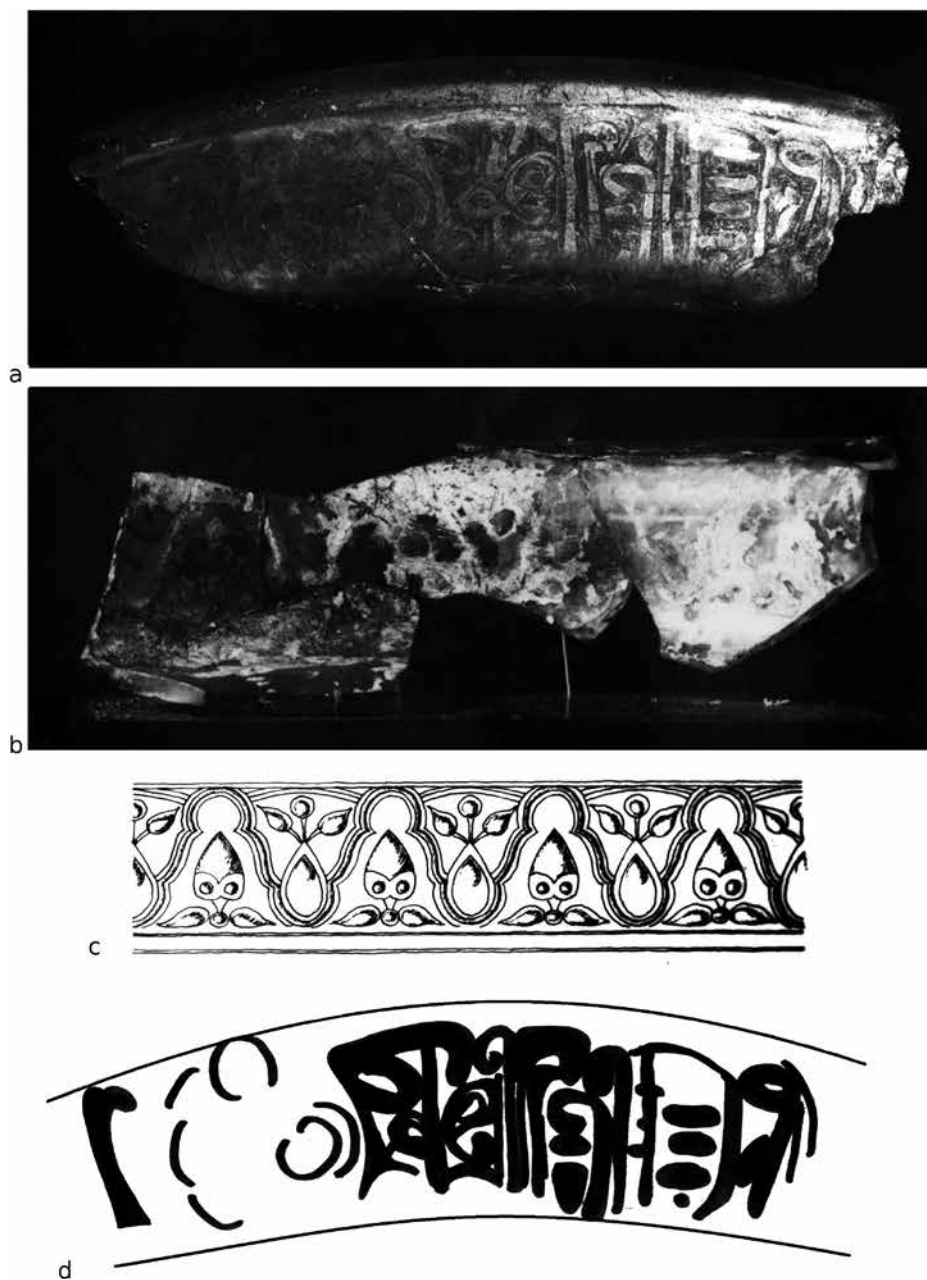


Fig. 2. Fragment of a mosque lamp from Opole–Ostrówek discovered in 1931; a – c archival photographs, Archive of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, Research Centre on Late Antique Culture and the Early Middle Ages; d – the inscription redrawn based on photographs. Prepared by S. Siemianowska

(EPMA) using the CAMEC Sx 100 device. Conditions of the analysis included accelerating voltage of 15 kV (electron energy of 15 keV), beam current of 10 nA, and beam width on a sample (spot) of 15 microns. They were checked for various patterns of synthetic oxides and natural minerals and glasses (Purowski 2012: 47; Purowski *et al.* 2012). The basis of this method is gunning a sample placed in a vacuum with an electron beam, which as a result emits X-rays, the measurements of which (wavelength and intensity) define its chemical composition (Purowski 2012: 47; Wajda 2013: 93) (Tab. 1). The examination allowed us to prepare a detailed chemical characteristic of the glass and the enamel covering it, which contributed to determining its origins. A thin section from the artefact was examined macroscopically and using a binocular magnifying glass, determining general features of the glass such as glass colour, degree of weathering, compaction, structure and texture (Tab. 2). Microscopic examination of the glass material was performed using a polarizing microscope, a Zeiss 'Axiolab pol'. Then, drawing on existing studies and frequently discussed methods of interpretation of the results of chemical compositions of ancient glass (see Ščapova 1973, 1983: 29–30; Dekówna 1980: 31–32; Stawiarska 1991; Ciepela-Kubalska and Stawiarska 2005; Černá *et al.* 2012; Dekówna and Purowski 2012; Purowski 2012: 45ff; Wajda 2013, 2014, and therein further references), the results of the chemical composition of the glass of the Wrocław mosque lamp were compared with results of similarly dated glass artifacts from Europe and the Middle East.

In terms of the chemical composition, the glass of which the artefact was made can be identified as sodic-calcic-silica (Na-Ca-SiO₂) glass (see Tab. 1). It is characterised by a high content of silica (SiO₂) – 69.05%, calcium oxides (CaO) – 8.89%, and sodium oxides (NaO) – 12.42%. The amount of iron oxides (FeO) in the glass is 0.52 % of the weight, chlorine (Cl) 0.68 % of the weight and manganese oxide (MnO) used for glass discolouration (Černá *et al.* 2009: 404) 0.71% of the weight. A considerable content of oxides: magnesium oxide (MgO) 3.75% and potassium oxide (K₂O) 2.83%, as well as the presence of aluminum oxide (Al₂O₃) 1.049%, indicates the use of ash from halophytes (salicornia and barilla), growing on soils with high salinity as well as in the steppe and desert regions (Stawiarska 1984: 35 and following; Freestone and Stapleton 1998: 122; Wedepohl *et al.* 2007: 266).

The paint decorating the vessel, recorded on BSE images, was also subjected to chemical composition analysis (Figs. 3 and 4). The EDS microanalysis showed that the main component of the decoration was gold (Au) (Fig. 5).

Richly enamelled and gilded sodic-calcic-silica glass with a raised percentage of the said elements is typical of Islamic products from Syrian and Egyptian workshops, which were controlled in the 13th–14th centuries by the Ayyubid and Mamluk dynasties (Freestone and Stapleton 1998: 122–124, Tab. I; Wedepohl 2003: 103–106; Wedepohl

Table 1. Chemical composition of the glass fragment from Ostrów Tumski in Wrocław, Inv. No. 2779/52. Prepared by K. Sadowski

Oxides	Percentage of individual oxides in the analysed glass
	# 5 Na-Ca-SiO ₂
K ₂ O	2.832
CaO	8.893
BaO	0.058
P ₂ O ₅	0.179
SO ₂	0.156
PbO	0.112
Cl	0.683
Ag ₂ O	0.000
SnO ₂	0.000
Sb ₂ O ₃	0.092
Fe ₂ O ₃	0.516
MnO	0.709
TiO ₂	0.052
CoO	0.057
NiO	0.033
CuO	0.000
ZnO	0.000
Na ₂ O	12.419
SiO ₂	69.052
Al ₂ O ₃	1.049
MgO	3.747
As ₂ O ₃	0.000
total	100.638

Table 2. Macroscopic and microscopic description of the mosque lamp fragment from Ostrów Tumski in Wrocław, Inv. No. 2779/52. Prepared by K. Sadowski

No. of analysis/ thin section	Site (trench)	Inv. No.	Artefact	Chronology	Colour	Transparency	Vesicles	Type of glass	Comments
5.	Wrocław – Ostrów Tumski, trench VI	2779/52	Fragment of enamelled lamp	13 th –14 th century	Bright yellow	Transparent	Numerous about 0.5 – 1 mm	Glass Na-Ca-SiO ₂	Paint – brown and white decoration; wall thickness about 3 mm

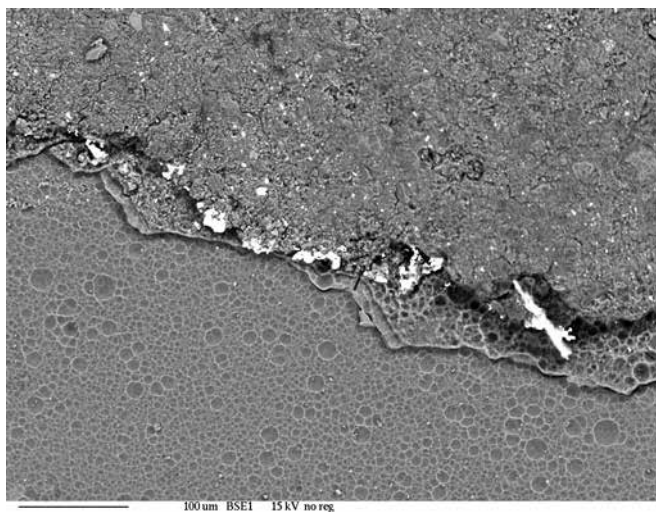


Fig. 3. BSE image of the painted surface of the mosque lamp from Wrocław–Ostrów Tumski.
Photo by P. Dzierżanowski

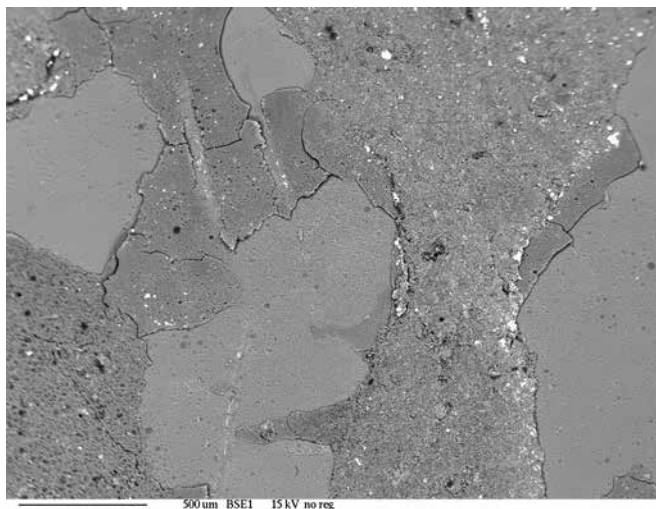


Fig. 4. BSE image of the painted surface of the mosque lamp from Wrocław–Ostrów Tumski.
Photo by P. Dzierżanowski

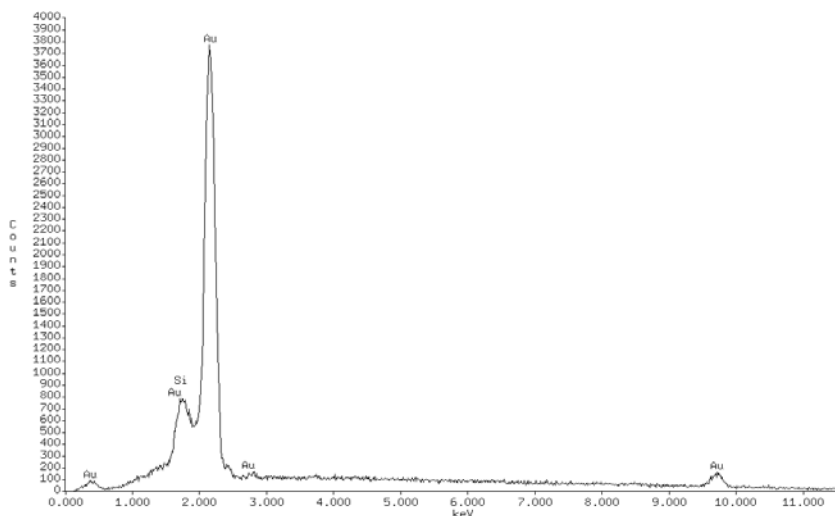


Fig. 5. EDS spectrum (elemental composition) of paint from the surface of the glass from Wrocław–Ostrów Tumski. Prepared by P. Dzierżanowski

et al. 2007, Tab. 1; Gueit *et al.* 2010: 1744, Tab. 1)⁸. The high level of chlorine and manganese oxides⁹ in the glass (Gueit *et al.* 2010: 1744, Tab. 1) and the use of gold for decoration (Gueit *et al.* 2010: 1745–1746) also pointed to Middle Eastern workshops¹⁰.

⁸ Studies on sodic-calcic-silica glass of Islamic, North Italy and Byzantine origins were taken into account for comparative study (Brill 1999, Chapters VII, VIII; 2001; Wedepohl *et al.* 2007: Tab. 1; Černá *et al.* 2009: 406; Gueit *et al.* 2010: Tab. 1; therein further references).

⁹ Most of the Islamic glass products contain above 0.3% MnO, used for glass discolouration (Wedepohl *et al.* 2007: 267).

¹⁰ Venetian imitations of late medieval Islamic glass products must be considered in any study of glass finds from sites in the deep European interior, in areas outside the direct influence of the caliphates. In the late Middle Ages, after the fall of the great centres of glass production in Syria and Egypt, Venetian glass-makers began to produce copies of glass mosque lamps for Arab and Turkish clients (Gross 2012: 51). Imports from the mid-13th century of halophytic plant ash from the Middle East as well as of cullet, facilitated the production of sodic-calcic-silica glass following the Islamic recipe (Wedepohl *et al.* 2007: 267). Italian workshops produced both glass imitating Middle East designs and vessels in the European style.

CONCLUSIONS

The chemical composition of the 13th–14th-century fragment of a mosque lamp found on Ostrów Tumski in Wrocław clearly indicates that it was made of sodic-calcic-silica glass, based on an ash recipe. The specific chemical composition of the glass as well as very characteristic surface paint based on compounds of gold indicate that it is an import from the Middle East, most likely from the Syrian–Egyptian circle. The two other artifacts from Wrocław–Ostrów Tumski and Opole–Ostrówek are also of Middle Eastern origin.

The presence of such distant and culturally different imports in Poland is not uncommon. One should mention finds of Middle Eastern glass and Islamic glazed pottery in central as well as western Europe¹¹. Fragments of mosque lamps are known from Ulm and Kiel, while fragments of enamelled glass are known from, among others, Kiel, Lübeck, Göttingen, Braunschweig, Maastricht, Prague, Tábor and Wrocław–Nowy Targ Square¹² (Baumgartner and Krueger 1988: 120–125; Černá *et al.* 2012, Tab. 1; Steppuhn 1996, 2014, 2016)¹³. The very important St Hedwig beakers, discovered in central Europe, should be mentioned here (Baumgartner and Krueger 1988: 86–105; Lierke, 2005; Wedepohl *et al.* 2007, therein further references). Glazed Middle Eastern pottery was discovered in the Fulda monastery, the Old Town in Erfurt, Prague Castle and Koválov near Žabčice, where it occurred in the context of a central mound located on the spot of a manor (Nováček 2011: 611–613). It is also known from late medieval layers in Elbląg and Wrocław (Nawrońska 2002; Miazga 2009).

Several issues related to glass mosque lamps from central European contexts still remain open. First is the function of these objects in a new, culturally foreign environment. Did they serve in their original role and light up monastery, palace or court interiors? Or were they prestigious decoration? Were they stored in treasuries as precious gifts? The second question is the how and from where did the glass mosque lamps come to Silesia. There are several possible routes and circumstances to be considered. Glass mosque lamps and other items of foreign, Islamic provenance could have been the object of long-distance trade, brought by migrating individuals and whole

¹¹ Finds of Islamic pottery outside the Italian Peninsula, Sicily and some regions of the Iberian Peninsula are extremely rare in Europe. In western and northern Europe, the occurrence of Islamic pottery from the Syrian–Egyptian and Iranian region overlaps the Mediterranean–Atlantic maritime trade routes. They have been discovered mainly at port sites and in the coastal zones of southern England, Belgium, the Netherlands, Norway and Sweden. Finds of Middle Eastern pottery, in comparison with glazed pottery from Valencia, Malaga and Seville, quite numerous in the Hanseatic–Atlantic areas, are extremely rare (Nováček 2011: 611–613).

¹² Unpublished material known to the author, S. Siemianowska.

¹³ On other finds of Islamic glass from Europe, see, among others, Lamm 1941; Carmona *et al.* 2009.

communities, military expeditions, as a result of diplomatic and political contacts, Christianising missions, marriage and service in a foreign court (see Wołoszyn 2000, 2004, for more). According to some researchers, Middle Eastern imports, such as glass, could have been gifts from Middle Eastern rulers or souvenirs brought back from the Crusades (Dean 1927; Černá and Podliska 2006: 251), or from pilgrimages to holy places, very popular in the late Middle Ages. The presence of richly enamelled glass products and Islamic glazed pottery in the context of ecclesiastical estates, castles, aristocracy and wealthy burghers' estates, and plots belonging to town craftsmen suggests that these items could be a determinant of wealth and social status. It is possible that they were personal gifts rather than traded goods (see Hagggrén and Sedláčková 2007: 192). Therefore, the glass mosque lamps discovered in Wrocław and Opole could have arrived from the Middle East first to Western Europe¹⁴ and from the Byzantine Empire to eastern Europe, from where they may have been traded or travelled on the pilgrimage routes to Poland. It cannot be ruled out that they were brought directly from the production centres, as gifts from foreign rulers or as 'souvenirs' from a journey to the Middle East.

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¹⁴ A significant amount of Islamic and Middle Eastern imports are known from urban centres and castles located in present-day Russia, Ukraine and Belarus. According to the already quoted researcher, the Volga and perhaps also the Dnieper most likely played a very important role in trade in the Middle Ages. A very large accumulation of 12th–13th-century imports of Eastern provenance is known from Navahrudak in Belarus. Excavations conducted there (1957–1960) yielded a significant number of finds of Islamic, Oriental and Byzantine origin, occurring together with imports from the Mediterranean, Poland and the Rhineland (Nováček 2011: 611–613).

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