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SUPPLEMENTARY MATERIAL TO
**Application of analytical techniques to the unveiling of the
glazing technology of medieval pottery from
the Belgrade Fortress**

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Serbian medieval glazed ceramics is a group of products dated from the first half of the 13th century to the middle of the 15th century. Archaeological investigations distinguished several workshops on the territory of the medieval Serbian state. The earliest hitherto discovered workshop was in the Studenica Monastery dated to the first half of the 13th century. Also, there were workshops in Ras area during the 14th century and at the beginning of the 15th century, and in Kruševac, Smederevo and Novo Brdo in the first half of the 15th century.^{1,2} The relevant locations in medieval Serbia are shown in Fig. S-1.

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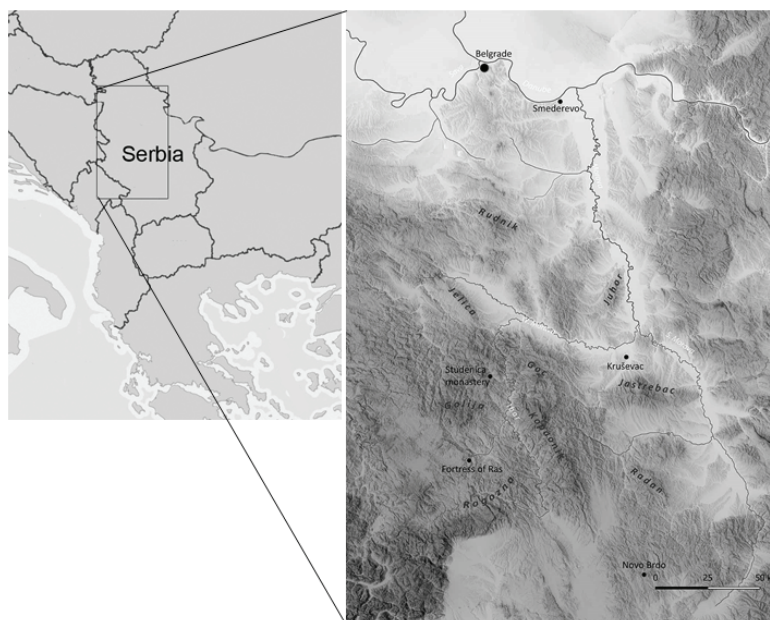

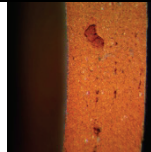
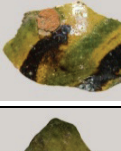
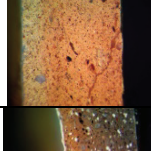
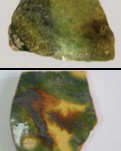
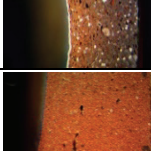
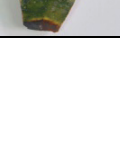
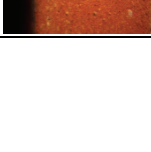

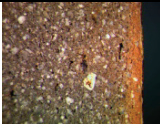
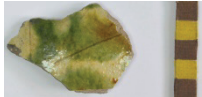
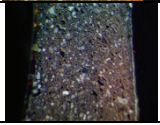

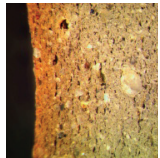
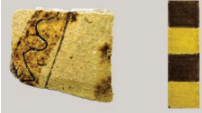


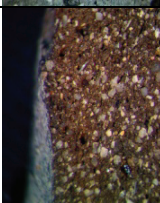

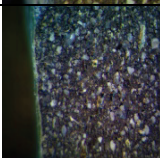
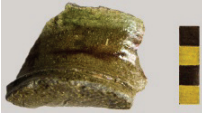

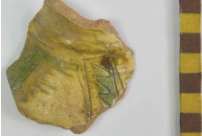
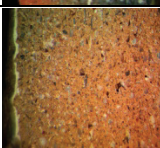
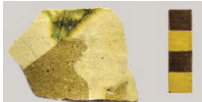
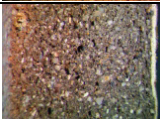
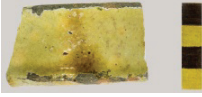


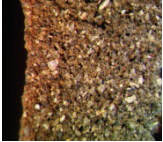
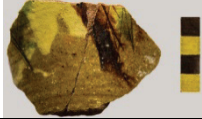


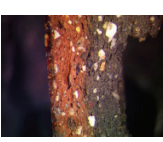

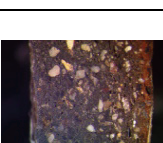

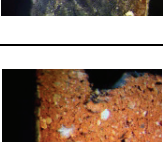

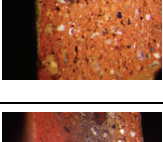
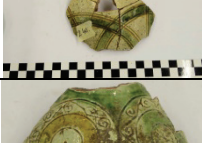
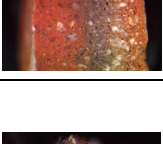


Fig. S-1. Map showing relevant locations in medieval Serbia (drawn by Uglješa Vojvodić).

TABLE S-I. Photographs and cross sections of the pottery samples (shards of jugs) from the Belgrade Fortress (denoted as BG) and the Studenica Monastery (denoted as S2); the groups are based on decoration techniques and colours

No.	Archaeological classification	Sample code	Sample photo exterior	Cross section
1.	Group I	BG-1		
2.	Group I	BG-2		
3.	Group II	BG-3		
4.	Group I	BG-4		

No.	Archaeological classification	Sample code	Sample photo exterior	Cross section
5.	Group II	BG-5		
6.	Group II	BG-6		
7.	Group II	BG-7		
8.	Group II	BG-8		
9.	Group II	BG-9		
10.	Group II	BG-10		
11.	Group II	BG-11		
12.	Group III	BG-12		
13.	Group II	BG-13		

No.	Archaeological classification	Sample code	Sample photo exterior	Cross section
14.	Group II	BG-14		
15.	Group III	BG-15		
16.	Group II	BG-16		
17.	Studenica Monastery	S2.33		
18.	Studenica Monastery	S2.34		
19.	Studenica Monastery	S2.36		
20.	Studenica Monastery	S2.37		
21.	Studenica Monastery	S2.42		

Archaeological context of pottery. The Belgrade Fortress is a multilayered archaeological site and monumental complex which has been changing for

almost two millennia: from the first traces of settlements dated Late Stone Age (Neolithic) until the 18th century.³ Due to the very important geopolitical position (hill above the confluence of the Rivers Sava and Danube), a Roman castrum Singidunum (2nd century) and later Byzantine castle (12th century) were constructed at the same location. At the beginning of 15th century, during the reign of Despot Stefan Lazarević (1404–1427), Belgrade became capital of Serbia. It was a fortified town where the Despot resided in the palace located in the thoroughly rebuilt Byzantine castle. Further changes in relief and more complex fortifications occurred during the Austro-Turkish wars (17th–18th century). Fortress was reconstructed three times and became one of the strongest defence points in Europe.

The most significant growth of Belgrade was at the beginning of the 15th century, when it became the military, political, economic and cultural centre of Serbia. The most important part of the town was the palace with court complex – Castle, protected in different ways by three separate fortifications: Upper Town, Western Suburb and Lower Town. Unfortunately, the parts of the walls and towers of this fortification, as well as the buildings located inside, were destroyed in the gun powder explosion in 1690.³

Archaeological investigations of the Castle were performed between 1963 and 1980, with occasional breaks. Extensive research related to the late Middle Age and later periods are still unpublished.⁴ However, information about the condition, character and content of the discovered archaeological unites can be obtained from the available field documentation. Archaeological layers from the early 15th century were separated in all the investigated areas, but contained limited ceramic material. The most important layer where glazed vessels were found was located above the level of Palace's courtyard. The shapes and decorations of ceramic vessels provide insight into furnishing of the Despot's court.

Description of samples. Group I (BG-1, BG-2 and BG-4) is characterized by fine-grained fabric. The body colours are different shades of red, with uniformly coloured cross sections. These samples are decorated in the same way: green, brown and yellow painted motives over white slip and transparent glaze. According to the technological and decorative characteristics, this group of samples belongs to pottery produced to the north of the medieval Serbian Despotate at the beginning of 15th century, famous for jugs from nearby Smederevo Fortress.⁵

Group II (BG-3, BG-5, BG-6, BG-7, BG-8, BG-9, BG-10, BG-11, BG-13, BG-14, BG-16) is characterized by medium-grained fabric. The body colours are brown, red and grey, uniform at the cross sections or rarely with red boundary and brown core (BG-3, BG-5, BG-11). The shards were, contrary to the group I samples, decorated by the painted sgraffito technique. The characteristics of this

technique are incisions of motives in white slip, green and yellow painting and, as the final step, application of transparent yellow or green (olive green) protective glaze. The samples from group II are related to pottery vessels produced in the Ras area during the 14th and the first half of the 15th century.¹

Group III (BG-12 and BG-15) is characterized by medium-grained fabric. The body colour is red, uniform at the cross sections. The shards are decorated using the painted sgraffito technique. The motives incised in white slip are highlighted with green and brown colour, and surface is protected by a yellow glaze. Even though by the overall appearances these samples are similar to samples from group II, based on decoration and colour they are related to pottery produced in central Serbia to supply Kruševac the capital of Prince Lazar and the neighbouring town Stalać.⁶

Archaeologically significant pottery material found at the Studenica Monastery, the oldest workshop in medieval Serbia, has recently been the subject of archaeometric investigations.^{7,8} Five representative pottery samples (S2.33, S2.34, S2.36, S2.37, S2.42) from this material were used in this work for comparison with pottery from the Belgrade Fortress in order to investigate similarities in pottery production. The samples from the Studenica Monastery were shards of painted and sgraffito jugs (Table S-I). They have the highest overall similarity with BG samples from group II, but pottery shards from Studenica have thicker walls compared to the BG group II samples. This pottery is mostly of fine fabric and with uniform wall thickness.^{8,9} Regarding the petrography, it is the uniform group, made of local raw material.¹ Compared to white painted olive-glazed jugs, which have brown and greyish brown body colour, the sgraffito vessels are red, in several nuances. Green, yellow and brown glazes were applied on the outer surfaces, over a white slip and sgraffito decoration.^{8,9}

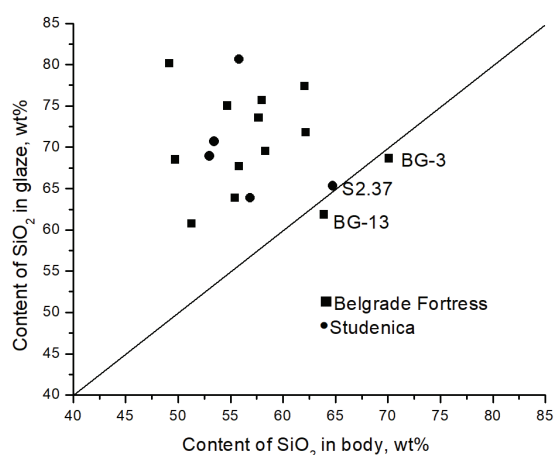


Fig. S-2. Plot of adjusted glaze composition vs. body composition for SiO₂.

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