

OCNUS

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Alma Mater Studiorum - Università di Bologna

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THE UZBEK-ITALIAN ARCHAEOLOGICAL PROJECT (UIAP) “SAMARKAND AND ITS TERRITORY”

*Simone Mantellini**, *Stefano Cecatiello***, *Sara Facciani****, *Valentina Orrù**, *Eleonora Serrone**, *Samariddin Suyunov^o*

Located in a strategic position along the main communication routes between East and West, and at the heart of economic and cultural phenomena such as the Silk Roads, Samarkand is one of the major oases in Eurasia. The historical importance of this region is reflected in its rich and diverse archaeological heritage. Since 2001, the UIAP has aimed to comprehensively study the urban evolution of Samarkand in relation to the transformations of its surrounding territory, through a multi-temporal and multi-scalar approach that includes a wide range of activities and the involvement of specialists from various disciplines. The main themes addressed include socio-environmental interactions, irrigation system, semi-mobile pastoralism, and the enhancement and protection of cultural heritage through collaboration and engagement with local authorities and communities.

The Samarkand Oasis and the Middle Zheravshan Valley

Located along the principal Eurasian trade routes, Samarkand has always been a crossroads of culture, economy, language, and religion along the ancient Silk Road. As the capital of ancient Sogdiana from the Achaemenid period (6th-4th century BCE) and later conquered by Alexander the Great, the city reached its peak development during the early Middle Ages preceding the Arab conquest of 712 CE. After its destruction during the Mongol invasion led by Genghis Khan in 1220, Samarkand experienced a resurgence of grandeur under Tamerlane, who made it the political centre of his empire (14th-16th centuries).

UIAP was established by Maurizio Tosi with the goal of studying the evolution of the Samarkand Oasis through a multi-scalar and multi-temporal approach (Shirnov, Tosi 2003). The research encompasses a territory of approximately 3,500 km², characterized by diverse ecological features ranging from the fertile plain irrigated by artificial canals,

to the semi-arid steppe used for livestock grazing, up to the Karatyube mountains. UIAP's activities include:

- Surface surveys in the administrative districts south of the Zheravshan River, aimed at creating the archaeological map of the Samarkand Oasis and studying settlement patterns from a diachronic perspective;
- Geo-archaeological investigations and studies on the irrigation systems;
- Stratigraphic excavations in strategic contexts, such as the sites of Kafir Kala and Boyssartepa, and the necropolises in the foothill regions;
- Field and remote laboratory activities, including the analysis of materials, bioarchaeology, anthropology, GIS, remote sensing, cartography, and topography;
- Initiatives focused on the protection, muse-umization, and enhancement of cultural heritage.

S.M.

Archaeological map: methodologies and results

Like other historical oases in Central Asia where sedentary populations have historically persisted within the same territory, the archaeological landscape of Samarkand features two characteristic elements: the *tepa/tepe*, multi-layered anthropogenic mounds with one or more occupational phases;

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and irrigation channels (Stride, Rondelli, Mantellini 2009; Malatesta *et alii* 2012), essential for supplying water to a territory with a semi-arid climate. A third element, less impactful on the landscape but equally significant for understanding patterns of land use and socio-cultural dynamics, comprises the *kurgan*, small burial mounds typically marked on the surface by a circular stone cairn.

The archaeological map arose from the necessity of documenting a territory profoundly altered by the agricultural policies promoted by the Soviet Union. From the 1950s onwards, these policies aimed to expand arable land and transform Uzbekistan into one of the world's leading cotton producers (Mantellini 2017; 2018; Mantellini, Berdimuradov 2019).

The mapping of sites was carried out through the integration of various types of spatial datasets. Soviet military maps at different scales (ranging from 1:10,000 to 1:100,000) proved particularly valuable due to their high precision and the inclusion of specific symbols used by topographers to identify artificial mounds (*tepa*) as terrain anomalies. Topographic maps, satellite imagery (notably CORONA and LANDSAT), aerial photographs, and the review of previous surveys provided the

georeferenced foundation for the GIS platform, which later evolved into a webGIS for a real-time monitoring of the region's historical and archaeological heritage (*Samark-Land*, <https://www.orientlab.net/samark-land/>).

Data collection was followed by an initial remote identification of anthropogenic features (desktop assessment) and subsequent field validation (fig. 1). The approach varied according to the ecological and cultural contexts under investigation (intensive surveys in the steppe and foothill regions and targeted surveys on the *tepa* mounds in the cultivated plains) and by combining the different available technologies, from GPS devices to modern mobile applications such as QField, AlpineQuest, and Epicollect. This methodology enabled the identification and field verification of over 2,500 archaeological features, 40% of which have been destroyed due to urban expansion and agricultural development (fig. 2, left). Among these, the majority comprised *tepa* mounds (55%), followed by *kurgan* burial mounds (30%). The remaining 12% included clusters of ceramic material, caves, and isolated finds, with an additional 3% attributed to minor features.

V.O.



Fig. 1. Survey in the Samarkand region: above, collection of materials discovered near a *tepa* in the steppe; below, documentation of a *kurgan* in the Karatyube foothills.

Population, irrigation and socio-environmental interactions

The results of various research activities conducted on both regional and local scales, combined with the study of archaeological materials, have enabled an analysis of the evolution of settlement and land use from the earliest prehistoric cave sites to the present day, with particular attention to the historical period (6th century BC to the modern era). The most intriguing aspect concerns the spatial organisation in the southern part of the Samarkand Oasis, where a distinct distribution between agricultural areas, designated for the living, and funerary spaces, reserved for the dead, has been observed (Mantellini *et alii* 2022) (fig. 2). The plain has revealed a high density of settlements associated with intensive exploitation made possible by irrigated agriculture. The Dargom, mentioned in historical sources and still operational, was the primary canal on the left bank of the Zeravshan River. Geo-archaeological investigations, combined with the analysis of satellite imagery and historical maps, have identified additional canals at varying altimetric levels, which supplied water to cities, villages, and fields (Mantellini 2018). At higher elevations, particularly between 800-1,000

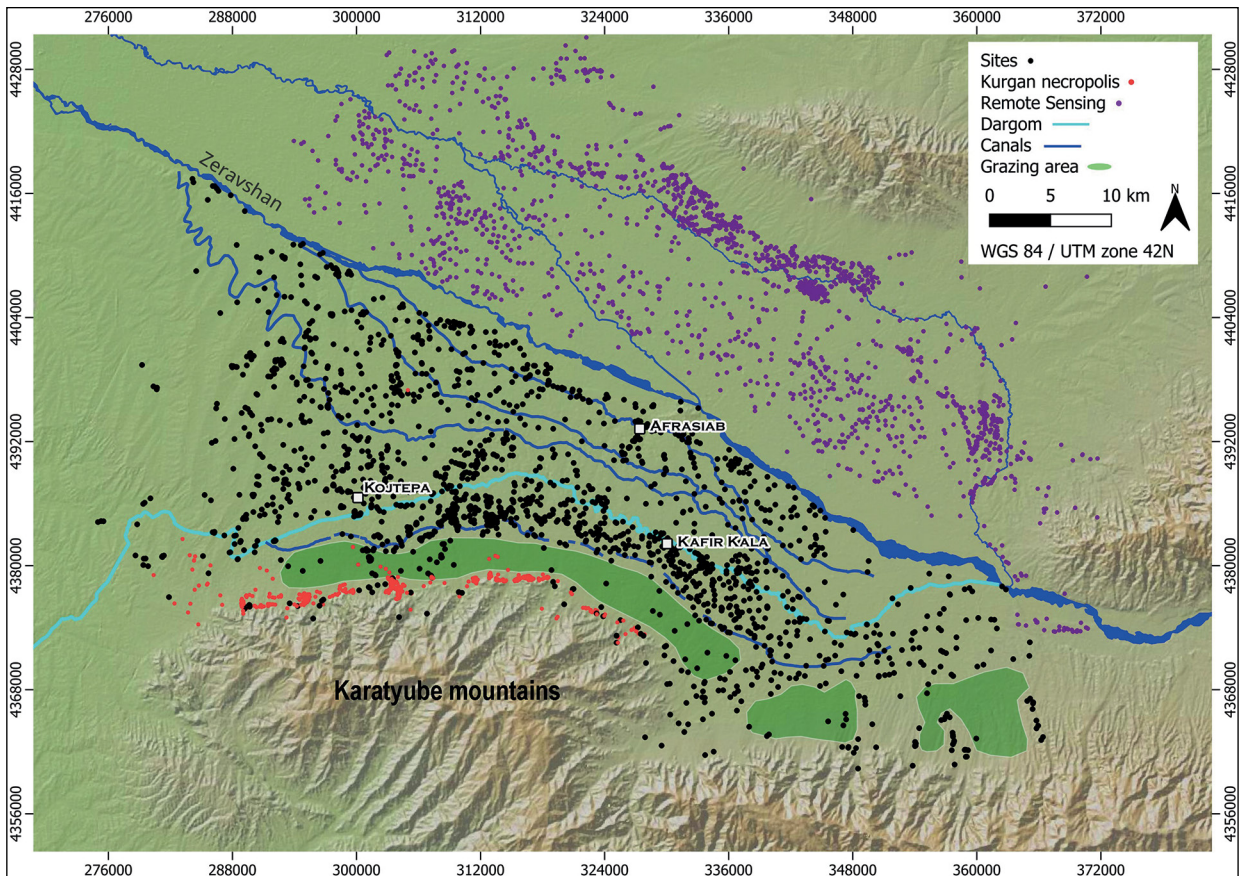


Fig. 2. Organization of the territory in the southern Samarkand oasis (basemap: ASTER GDEM 2012).

m above sea level along the Karatyube foothills, more than 300 necropolises with burial mounds (*kurgan*) have been documented, contrasting with approximately ten settlements (*tepa*). The hypothesis is that this area, difficult to utilise for agriculture, served as a funerary zone for those agricultural communities of the plains below (Mantellini *et alii* 2022). Between the cultivated plains and the foothills, there are zones of varying width devoid of archaeological sites, which are plausibly indicative of extensive use for pastoralism. Additionally, to deepen our understanding of livestock management strategies, preliminary isotopic analyses (C and O) have been conducted on animal remains from archaeological excavations. The initial findings, compared with isotopic data from local plants and water collected near Kafir Kala and along Karatyube, suggest a degree of seasonal mobility between lowland pastures during the winter and upland pastures in the summer.

E.S.

Excavation and valorisation of the fortified complex of Kafir Kala

Among the numerous stratigraphically investigated sites, the fortified complex of Kafir Kala is undoubtedly the most significant. Located on the left bank of the Dargom canal, approximately 12 km from Afrasiab, Kafir Kala is a monumental settlement constructed entirely of raw clay and spanning over 20 hectares (Mantellini, Berdimuradov 2005).

The monumental character of Kafir Kala, its strategic position relative to the ancient and modern cities, and its recent inclusion in the UNESCO World Heritage List (<https://whc.unesco.org/en/list/1675>) make it a unique case for promoting archaeological tourism in Samarkand. The KALAM project (<https://site.unibo.it/kalam/en>), coordinated by Nicolò Marchetti, aims to establish an open-air archaeological park at Kafir Kala, featuring visitor facilities and a guided tour that explains the site's history through its most significant archaeological discoveries. The project's design phase has involved close collaboration with

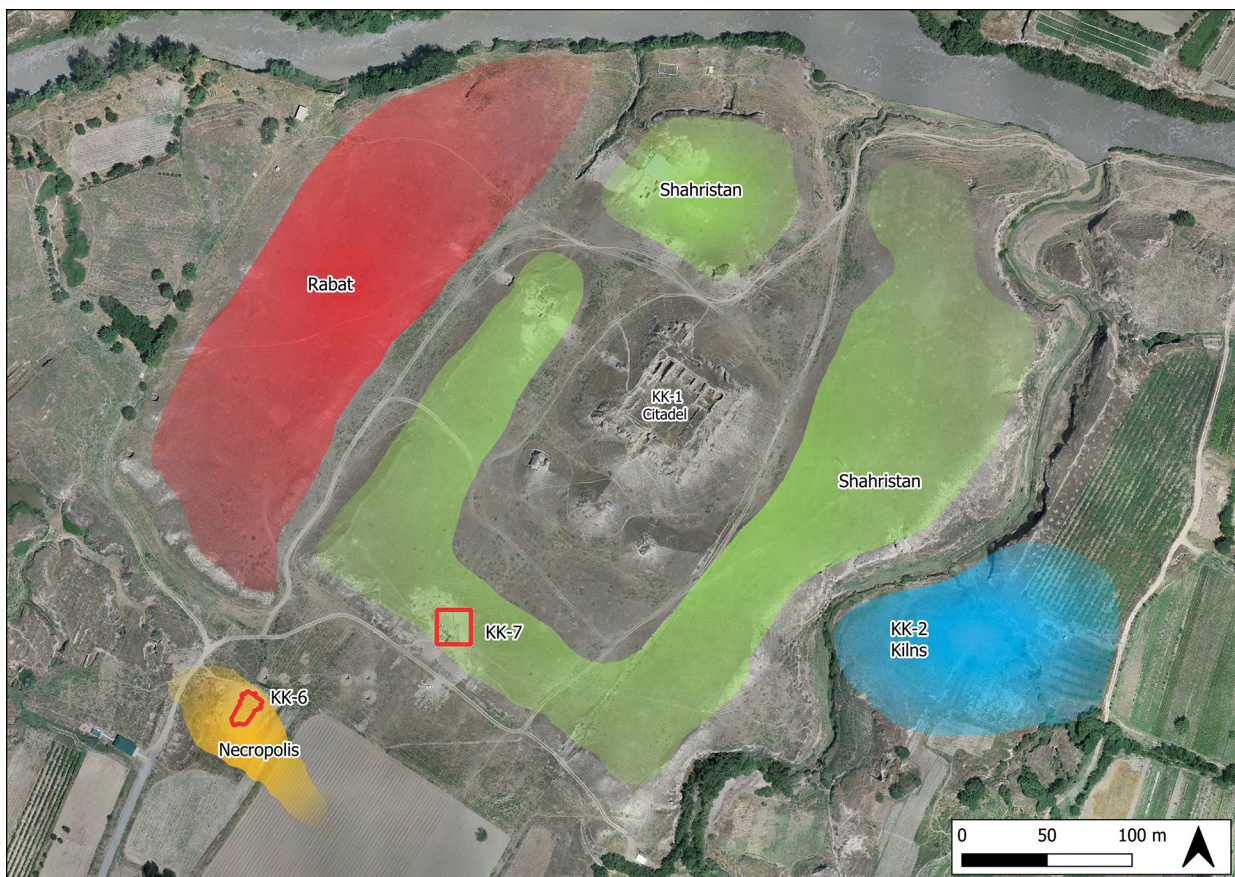


Fig. 3. The Kafir Kala complex with its internal organisation and UIAP excavation areas (basemap: drone orthophoto, IICAS Samarkand 2023).

local authorities and the village communities surrounding the site. The park opening is scheduled in 2025.

S.S.

Kafir Kala and the UIAP excavations

The site exhibits a complex internal structure (fig. 3). The central nucleus consists of a quadrangular citadel (50×50 m, height 25 m), surrounded by a defensive moat, defended by six towers, and adjoined by a large residential district (*shahristan*). To the west, a second moat separates the citadel from an outer district (*rabat*). Investigations conducted by UIAP have explored various areas of the site, revealing a long sequence of occupation spanning from the early Medieval period (late 7th century) to the Timurid period (early 15th century).

The citadel (KK-1, excavated between 2001 and 2014) housed an important administrative centre, as evidenced by the discovery of over 700 clay *bullae* usually used to seal documents, letters, and containers (Cazzoli, Cereti 2005). These *bullae*

were found on an earthen floor covered by a substantial layer of charred wood, attributed to a fire caused by the Arab conquest in the early 8th century. This event may also explain the name Kafir Kala, derived from the Arabic “fortress of the infidels,” a toponym absent from written sources but preserved in local oral tradition. The citadel underwent a second phase of occupation during the Islamic and Karakhanid period (12th century). This phase was characterised by the reuse and adaptation of earlier structures, along with numerous hearths used for cooking, hence indicating a primarily residential function (Mantellini *et alii* 2016; Serrone *et alii* 2021; Chinni *et alii* 2023).

The artisan district (KK-2, excavated in 2007–2008) is located on the right bank of the Iionsai stream. Excavations uncovered six ceramic production kilns, some of which were partially damaged and devoid of material due to erosion caused by hydrographic changes in the watercourse. The only confirmed dating for the district, based on ¹⁴C analysis, places its use in the 13th–14th centuries, although it is plausible that the kilns were in operation during the pre-Islamic period.



Fig. 4. Plan of the Kafir Kala necropolis (KK-6) with highlighted the burials dated through ^{14}C analysis.

Recent investigations at the site (2022–present) have focused on the necropolis and the southern *shahristan* (residential district) to establish a stratigraphic sequence comparable to that from the citadel. The primary findings from both sectors have identified significant Ikhanid (13th-14th century) and Timurid (14th-15th century) phases, previously unattested at the settlement which extend the site's occupation into the late Medieval period. Future excavations of the southern *shahristan* aim to determine whether the proposed chronological framework can be extended to pre-Islamic periods predating the 7th-century materials identified in the citadel.

S.F.

The necropolis

The necropolis (KK-6) currently covers an area of approximately 240 m² at the entrance to the site. Originally, it consisted of at least five mounds, four of which were investigated by I.A. Sukharev and remained visible until the 1970s (Berdimuradov, Mukhammediev 2016), as evidenced by CORONA satellite imagery and aerial photographs. Today,

only one mound, designated KK-6, has survived agricultural activities that affected the southern part of the site over the past decades. UIAP excavations on the surviving mound revealed a situation consistent with previous investigations but with additional details that allow the identification of at least four main phases of occupation and use of the area. The earliest phase is characterised by the creation of the mound, using soil excavated from a canal located a few metres south of the necropolis. During the pre-Islamic period, a Zoroastrian *naus* was constructed at the summit of the mound, a funerary space where the bones of the deceased were placed in terracotta ossuaries. This phase survives only in the architectural layout of the necropolis, as all the ossuaries were removed in antiquity to make way for burials from later periods. Beginning in the Islamic period, the structure was repurposed for inhumation burials, with 43 identified by the end of the excavations (fig. 4). The human remains, currently under study, represent a greater number of individuals, including both infants and adults, some of whom were discovered in secondary contexts. These burials are characterised by two funerary chambers: an upper chamber (or *dromos*) and a



Fig. 5. The excavation in the southern shahristan seen from South (drone photo, IICAS Samarkand 2023).

lower chamber where the body of the deceased was placed. Often, as part of the burial ritual, one or two rows of clay blocks or mud bricks were deposited. Grave goods were limited to a few ornaments, such as bracelets, rings, and earrings. Anthropological studies and amelogenin analysis indicate that these items were associated with female burials. However, these grave goods did not provide secure dating for the burials. This is also applicable for ceramic materials which, although dated to the Timurid period, were only found within fill layers and not associated with the burials themselves. Radiocarbon analysis of organic samples from the necropolis has dated the site's use to between the 9th and 15th centuries, with the majority of burials falling between the 13th and 14th centuries. The final phase of activity, marked by the presence of two *achak* (small ovens for heating water and food), indicates occasional non-funerary use of the area.

S.F.

The South Shahristan

In the southern shahristan (KK-7), a 20×20

m excavation revealed five phases of occupation, dated to between the 13th and 15th centuries based on stratigraphic analysis and ceramic evidence (fig. 5). The phases explored so far primarily relate to a courtyard area with evidence of domestic activities, including *tandir* (traditional dome-shaped ovens for cooking), *achak*, simple hearths, refuse pits, and postholes for lightweight canopies or roofs. Phase 1 (14th-15th centuries) represents a brief, sporadic occupation of the area, characterised by hearths, pits, a possible burial, and a circular structure made of river pebbles that suggests a ritual function (as these pebbles are unusual and rare in this region). Phase 2 (14th-15th centuries) is associated with a courtyard area containing small mudbrick workbenches for food preparation, as well as hearths, postholes, and refuse pits (fig. 6). Phase 3 (13th-14th centuries) reveals a more complex spatial organisation of the courtyard, evidenced by an increased number of *tandir*, mudbrick workbenches, and refuse pits. Phase 4 (13th-14th centuries) is poorly preserved, featuring adobe floors, hearths, and refuse pits that suggest a brief occupation. Conversely, Phase 5 (still under study) shows systematic, organized and continuous use of the area, with various fire features, mudbrick

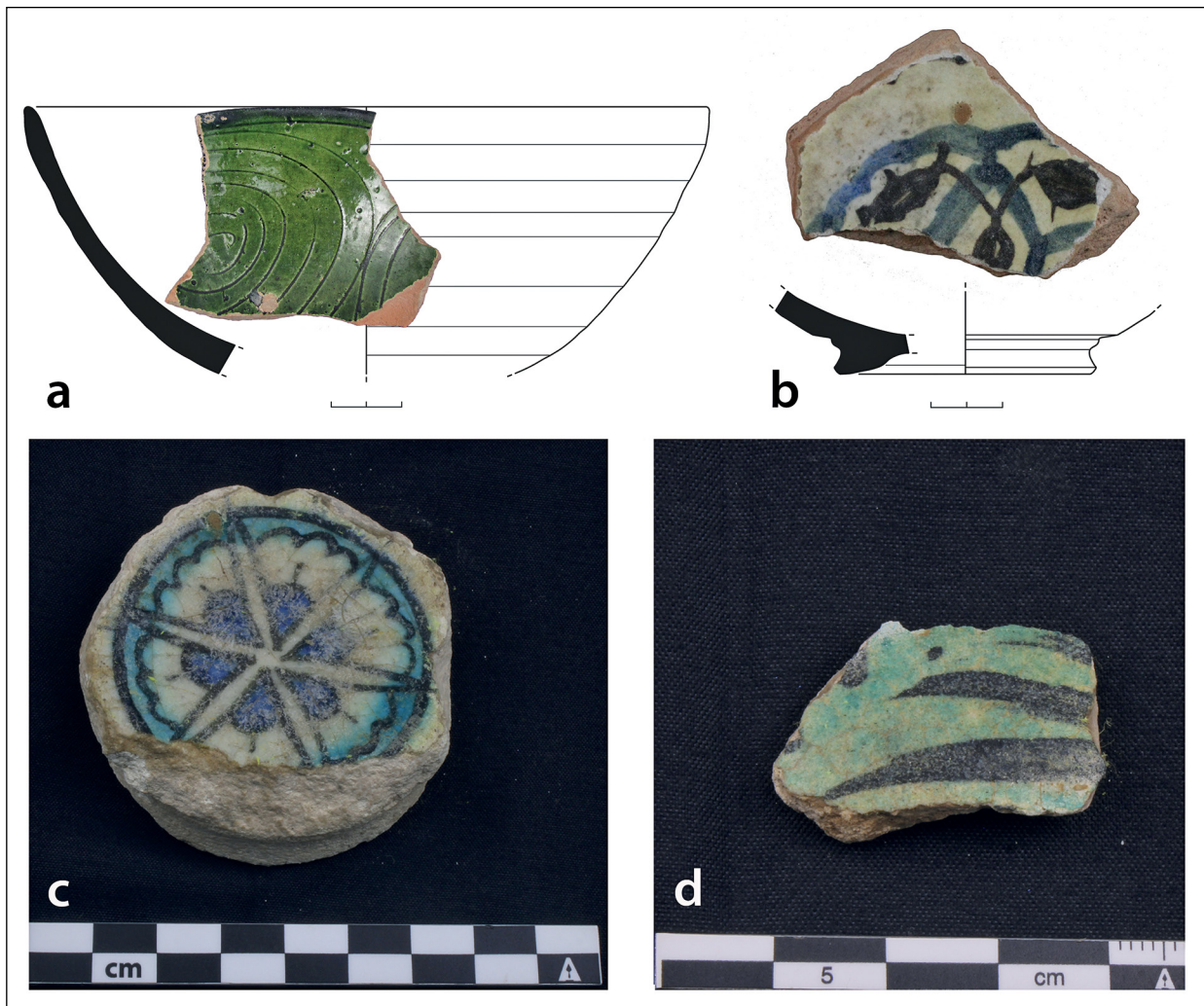


Fig. 6. Examples of glazed ceramics from Kafir Kala: a) Green monochrome sgraffito earthenware bowl from KK-6, inv. no. KK6.2022.SU1014/1; b) Underglaze-painted earthenware ring base of a bowl from KK-6, inv. no. KK6.2022.SU1316/1; c) Underglaze-painted stonepaste ring base from KK-7, inv. no. KK7.2023.SU1100/103; d) Underglaze-painted stonepaste fragment from KK-7, inv. no. KK7.2023.SU1100/104 (drawings by A. Fusaro; photos by A. Fusaro, O. Patone).

workbenches, and numerous *khum* (large storage containers) associated with substantial mudbrick and *pakhsa* (compacted clay) architecture.

S.C.

Dissemination

The results, updates and events linked to UIAP are published on the main social media platforms, with the purpose of allowing the accessibility of information to the wider public. The strategy of communication is structured on the creation of a strong visual identity and the sharing of visual and textual content documenting daily, archaeological and non-archaeological activities of the research

group, contributing to reinforce the interest and involvement of users.

Linktree: <https://linktr.ee/unibosamarcanda>
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