

PORPHYRA

WORKSHOP | 1st-2nd NOVEMBER 2019

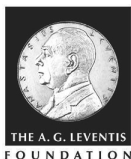
The materiality of purple dye production and use
in Cyprus and the Aegean from Prehistory to the
Late Roman period



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Venue:

Archaeological Research Unit

12, Gladstone street, Nicosia 1095

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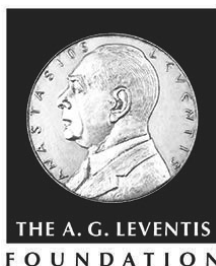


Archaeological Research Unit (ARU), University of Cyprus



Institute for Aegean Prehistory (INSTAP) Study Center for East Crete

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Venue

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The materiality of purple dye production and use in Cyprus and the Aegean from Prehistory to the Late Roman period

The study of purple dye production offers a dynamic field for new research. Developments in maritime archaeology and the increasing application of specialized field methodologies and laboratory techniques have resulted in a wealth of new data and fresh approaches to older material. These results can now be added to the rich collection of ancient written sources describing the process; however, with the new evidence come particular challenges.

Concentrations of crushed purple shells are usually understood as evidence for the existence of a purple dye workshop at a particular location. Crushed shells, however, are found in a range of contexts, at different distances from the coast and in varying amounts. Purple shellfish are also edible and decorative. While traces of pigment can form an additional type of evidence, this is often found in contexts far removed from production sites. This plethora of possibilities has created a degree of confusion in the interpretation of such finds. The situation is further complicated by the fact that testimony from Greek and Roman sources is often used to interpret purple dye production in all periods.

In the last few years, interdisciplinary and historically situated analysis of several contexts in both the eastern and western Mediterranean have prepared the ground for a new attempt to examine the criteria used to identify installations for purple dye production in different chronological periods. Careful analysis of the same data also appears to offer an opportunity to distinguish primary and secondary uses of the products and by-products of these installations (workshops), thus uncovering the embedded nature of purple dye production and a more nuanced appraisal of its social, economic and cultural meanings.

The Workshop on the materiality of purple dye production, which is jointly organized by the Institute for Aegean Prehistory Study Center for East Crete (INSTAP-SECE) and the Archaeological Research Unit (ARU), University

of Cyprus, will place primary emphasis on the archaeological remains of purple dye production and use and the importance of context when interpreting these remains. It is also an opportunity to promote detailed presentations of new or little-known case studies from Cyprus and the Aegean spanning a broad chronological scope from prehistory to the Late Roman period. Within these parameters the event will make a meaningful contribution to contextualizing the form and development of this major craft in the eastern Mediterranean.

The Workshop is open to scholars and laymen alike (no registration fees are required). It will take place on the 1st (Friday afternoon) and the 2nd (Saturday morning to late afternoon) of November 2019 in the premises of the Archaeological Research Unit, University of Cyprus (12, Gladstone street, Nicosia, tel. 22893560).

Workshop programme

Friday, 1st of November

18.30 Participants and audience registration at ARU

19.00 *Opening addresses*

Marina Solomidou-Ieronymidou, Director of Antiquities, Cyprus

The Porphyra Workshop: An Introduction

Maria Iacovou, Tom Brogan

19.30 *Purple production on Chryssi Island in the Bronze Age*

Tom Brogan on behalf of Dimitra Mylona, Chryssa Sofianou, Vili

Apostolakou, Philip Betancourt, Melissa Eaby

20.30 Cocktails in the premises of the ARU

Saturday, 2nd of November

09.30 Participants and audience registration at ARU

09.45 Opening Remarks

First Session | Chair: Vasiliki Kassianidou

10.00 *A survey of shell purple-dye production and use in the eastern half of the Mediterranean*

David S. Reese

10.30 *The production of purple dye in the Western Mediterranean during the historical period*

Carmen Alfaro-Ginier

11.00 Coffee break

Second Session | Chair: Ourania Kouka

11.30 *Purple dye in the Aegean Bronze Age: the archaeomalacological perspective*

Rena Veropoulidou

12.00 *A purple dye workshop at “Magoula Pefkakia?” Preliminary results from the integrated study of the archaeological finds*

Anthi Batziou, Demetrios Agnousiotis, Rena Veropoulidou

12.30 *Analytic evidence for purple dye and byssus production in the Late Bronze Age settlement at Cape Kolonna, Aegina*

Lydia Berger, Gerhard Forstenpointner, Fabian Kanz

13.00 *Purple dye production at Late Cypriot Hala Sultan Tekke, Cyprus*

Peter M. Fischer

13.30 Lunch break

Third Session | Chair: Giorgos Papasavvas

14.30 *Rhodian purple dye: evidence from the prehistoric settlement at Trianda and the ancient town of Rhodes*

Sophia Sotiropoulou, Toula Marketou

15.00 *Purple dye production under royal management: evidence from the Cypro-Classical citadel of Ancient Paphos*

Dimitra Mylona, Maria Iacovou

15.30 *A possible Hellenistic-Roman purple dye installation in Eretria, Greece*
Stephan Schmid (presented by Sophie Horacek)

16.00 Coffee break

Fourth Session | Chair: Maria Parani

16.30 *Purple dye workshop on Agathonisi*

Pavlos Triantafyllides

17.00 *A Roman purple dye workshop from Chania, Crete*

Aggeliki Tsiggou

17.30 Discussion and concluding remarks

20.00 Dinner for participants

Workshop abstracts

Purple production on Chryssi Island in the Bronze Age

Tom Brogan, Dimitra Mylona, Chryssa Sofianou, Vili Apostolakou, Philip Betancourt, Melissa Eaby

A recent Heidelberg dissertation surveyed the use and settlement history of the small peripheral islands around Crete. The author, Kostas Chalikias, presents a compelling hypothesis that settlement on all six of Crete's small islands exhibits strong "patterns of alternating insularity, isolation, and intensive interaction with the communities of the mainland." His survey of one of these islands, Chryssi, and the opposite Ierapetra coast identified three periods of intensive interaction, one of which occurred during the Bronze Age. In this presentation we focus on insular activity during the Protopalatial and Neopalatial periods (ca. 1800-1450 BCE) and more specifically, the archaeology of a Minoan maritime community on Chryssi.

Recent excavations have targeted the largest settlement on the island where there are clear signs of intensive activity for a period of 300-400 years. Beginning in the Middle Minoan IIB period (ca. 1800 BCE), groups appear to have visited the island seasonally to exploit local resources, including the rich population of purple shells. Tests of several shell spreads have recovered Protopalatial pottery and the tools needed to make purple dye. The absence of significant architectural remains suggests that occupation in this phase may have been limited in scale and was probably seasonal. This picture changes in the Neopalatial period with the appearance of several dwellings that reach their maximum size in Late Minoan IB (ca. 1550-1450 BCE). So far two of these buildings, B.1 and A.2, have been excavated completely. Both contain suites of rooms arranged in two wings, one dedicated to crafts like purple production and the other for the storage of foodstuffs and tools and for the preparation of food. What is immediately striking is the large amount of space that is clearly dedicated to craft, up to 50%.

Our paper provides a detailed analysis of the new evidence for purple production within the specific context of a specialized marine community and highlights the diachronic development of this craft on Crete and its islands. The

results not only shed new light on a Minoan craft but also examine it from the perspective of different levels of the Minoan palatial economy: household, community, and palatial region.

A survey of shell purple-dye production and use in the eastern half of the Mediterranean

David S. Reese

This survey attempts to note all sites in the eastern half of the Mediterranean that have produced crushed purple shells and/or evidence for purple-dye production; it includes evidence from analyzed textiles, residues in vessels, the use of purple in making pigments (as paints for wall paintings and terra cottas), and the presence of the shells as inclusions in plasters and mortars.

The sites, of all dates (Middle Bronze Age to Byzantine), where there is shell evidence for this industry are: Croatia (Katoro); Greek mainland (Hagios Mamas; Thessaloniki Toumba; Magoula Pefkakia; Athens; Eleusis; Hagios Kosmas; Hagios Georgios; Corinth; Mitrou; Hermione; Eretria; Gythion); Crete (Palaikastro; Koufonisi; Malia; Limin Chersonisos; Chania; Makrygialos; Kommos; Karoumes Siteia; Alatzomouri-Pefka; Mochlos; Chryssi Island; Papadiokampos; Vai-Itanos); other Greek islands (Kolonna on Aegina; Kythera; Akrotiri on Thera; Hagia Irini on Keos; Delos; Poliochni on Lemnos; Mytilene [=Lesbos]); Turkey (Troy; Kinet Höyük; Aperlae; Andriake); Cyprus (Hala Sultan Tekke; Polis [Marion]; Palaepaphos [Kouklia]); Syria (Minet el-Beidha and Ras Shamra; Tell Rifa'at); Lebanon (Sarepta; Beirut; Sidon; Tyre); Israel (Tell Akko; Tell Abu Hawam; Tel Megadim; Tel Dor; Tel Kikhmoret; Tel Mevorakh; Yavneh Yam; Tell Mor; Apollonia-Arsuf); Egypt (Marsa Matruh [Bates' Island]); Libya (Benghazi; Lepcis Magna; Tobruk; Ras Etteen; Sabratha). The only site with an installation to produce purple dye was found at Tell Dor (Israel).

Purple dye has been found in analyzed textiles from the Kerameikos cemetery (Athens) and Vergina (Greek mainland); Enkomi (Cyprus); Tell Mishrife/Qatna and Palmyra (Syria); Masada and Wadi Murabba'at (Israel); and various Roman and Coptic examples come from Egyptian sites. Purple dye residues have been found in vessels from Alatzomouri-Pefka (Crete); Sarepta (Lebanon); Tell Keisan, Tell Shiqmona, and Tell Kabri (Israel). Purple dye was

also used to make paint pigments at Gla, Koroneia Cave, Hagios Athanasios, and Mieza (Greek mainland); Raos (Thera); Trianda (Rhodes); Tell el-Dab'a (Egypt).

Purple shell fragments have been found as inclusions in plasters or mortars from Tiryns and Thebes (Greek mainland); Pseira (Crete); Phylakopi (Melos); Miletus (Turkey); Lepcis Magna (Libya), and they were used to produce lime at Monastiraki (Crete); Kourion (Amathus Gate Cemetery; Cyprus); and Benghazi (Libya). Purple shellfish operculae are preserved from the Ulu Burun (Kaş) shipwreck off the Turkish coast and were probably an ingredient used to make incense (and a by-product of purple-dye production).

The production of purple dye in the Western Mediterranean during the historical period

Carmen Alfaro-Ginier

Purple dye production flourished on the western Mediterranean coasts under the Roman empire. Specific locations of imperial *vafeia*, purple dye production sites and/or dyeing facilities, were recorded in the *Notitia Dignitatum*, a document that details the administrative organization of the Eastern and Western Empires. In the last decades focused archaeological research has confirmed these attributions and added valuable new data. This presentation discusses the characteristics of the *vafeia* sites in the west and proposes future directions for research, focusing on purple dye production.

Purple dye in the Aegean Bronze Age: the archaeomalacological perspective

Rena Veropoulidou

Purple dye is one of the most famous ancient dyes in the Mediterranean. Its high value, especially at the peak of its use, led to its long-lasting popularity, which even now is visible in both secular and religious spheres. Until recently, however, research remained narrowly focused on the ancient written sources for assessing the economic, social, and symbolic status of purple in the Greek and Roman world. Other lines of evidence were usually given a subsidiary role, while questions related to the development of the craft and the role of the dye in the Bronze Age were seldom explored, with a few exceptions that questioned long-held preconceptions on the subject and its material remains.

One line of evidence that has not been adequately investigated is the archaeomalacological remains, even though shells of particular mollusc species of the *Muricidae* family represent one of the few surviving strands of evidence for purple dye from the Aegean Bronze Age. My paper examines the topic from the perspective of shells, drawing upon many published and unpublished archaeomalacological datasets from mainland Greece, Crete, and Turkey. The aim is to reveal how the detailed study and contextual analysis of shell remains can provide a more nuanced understanding of purple dye, both the product and the craft, and a better appreciation of its development in time and space. In this endeavor, advances and pitfalls in current approaches will be critically discussed to highlight the significance of a holistic archaeomalacological analysis in addressing central issues, such as raw material procurement, preparation techniques, and scale of production. The ultimate goal is to demonstrate the potential contributions that shell remains can make to current research agendas, such as the organization of crafts and the role of raw materials, products, and trade networks in the economic and social developments that occurred during the Bronze Age in the Aegean.

A purple dye workshop at “Magoula Pefkakia?” Preliminary results from the integrated study of archaeological finds

Anthi Batziou, Demetrios Agnousiotis, Rena Veropoulidou

The prehistoric site of “Magoula Pefkakia” lies on a peninsula 1.5 km south of Volos; excavations at the site by D. R. Theocharis uncovered successive archaeological embankments dating from the end of the Neolithic to early LH IIIC. More recently, excavations southeast of Magoula Pefkakia in 1986/1987 have brought to light a Mycenaean building complex near the sea. The proximity of the contemporary Mycenaean settlements at Pefkakia and Dimini has led to the suggestion that the former may have served as the harbor of the kingdom of Iolkos.

Systematic excavations since 2006 have uncovered another interesting, well-preserved sector, which is dated to the last phase of habitation in LH IIIB2/LH IIIC Early. From the architectural remains and the small finds (including abundant remains of shellfish), we argue that this is an “industrial complex”

whose occupants were involved in dyeing and metalworking. The find is unique so far in Central Greece.

Analytic evidence for purple dye and byssus production in the Late Bronze Age settlement at Cape Kolonna, Aegina

Lydia Berger, Gerhard Forstenpointner, Fabian Kanz

Since 2014 archaeological research at Cape Kolonna has focused on the eastward expansion of the Late Bronze Age settlement. This so-called Outer Suburban Area was structurally adapted and fortified, probably in the Shaft Grave Period (Late MH/Early LH). Due to the early and poorly documented excavation of the area in the 19th and 20th centuries, the stratigraphic sequence is still uncertain. To clarify the issue, small areas that remained unexcavated in the past have now been investigated in detail.

In Sector K10 a thick (up to 0.8 m), multi-layered deposit indicates a gradual formation process reflecting several episodes in the destruction of at least two LH IIA buildings combined with conflagration. The finds indicate the presence of both domestic and workshop spaces in the eastern peripheral zone of the settlement in the 16th century BC. The lowest layer of the older destruction deposit yielded evidence related to purple dye production: fragments of closed vessels with purple color pigments on the interior as well as part of a shallow pit filled with crushed purple shells. These finds are associated with three adjacent features: a clay floor, a small ditch, and probably a stone structure to the south.

Our zooarchaeological analysis is still in progress. So far, the recorded sample includes both mammal bones (NISP=510, mainly ovicaprids, followed by pig and cattle) and large quantities of molluscan remains, which are dominated by *Hexaplex trunculus* (MNI=179, hand-sorted sample) and *Pinna nobilis* (MNI=71, hand-sorted sample). Wet sieving has additionally yielded large amounts of smaller shell fragments of *Hexaplex* and *Pinna*. The molluscan assemblage also includes at least 37 other marine and terrestrial species.

Finally, chemical analysis of purple dye residues from the interior of a vessel demonstrated the exclusive use of the species *Hexaplex trunculus* for dye production at Aegina Kolonna.

Purple dye production at Late Cypriot Hala Sultan Tekke, Cyprus

Peter M. Fischer

At Hala Sultan Tekke large quantities of crushed *Hexaplex trunculus* from several city quarters (CQ) and the area of the cemetery (Area A) point to the existence of a purple dye industry. The majority of the finds are from Strata 2 and 1 which date to the period from ca. 1200 to the first half of the 12th century BCE (LC IIC/IIIA). This is partly explained by the fact that Strata 2 and 1 are the best excavated levels at the site. Relevant contexts were exposed, for instance, in CQ2: a large amount of *Hexaplex*, together with a basin which was used in the production of purple dye, was found close to an isolated building. Stains of purple dye were still visible at the bottom of the basin, which was coated with lime plaster. Additional basins were uncovered in CQ1 and 3 which may also have been used in the production of purple dye. Recent work in CQ4, moreover, has revealed a rectangular system of streets surrounding a large compound partly built of ashlar blocks. A concentration of *Hexaplex* was found close to a storage facility. This short presentation provides a summary of the evidence for a purple dye industry at Hala Sultan Tekke in the second half of the LC period.

Rhodian purple dye: evidence from the prehistoric settlement at Trianda and the ancient town of Rhodes

Sophia Sotiropoulou, Toula Marketou

The discovery of large quantities of purple pigment close to one of the most impressive Late Bronze Age (LBA) IA buildings in the SW sector of the major prehistoric town at Trianda (Ialysos) in Rhodes is remarkable. It was recovered together with fragments of frescoes, LB IA pottery, and a deposit of whitish powder – most probably lime for making plaster – as well as crushed murex shells which may have been used for the construction of the floor of the polythyron in the NW sector of the settlement. Together the finds attest to murex dye production in the settlement before the Theran eruption, which brought the large deposits of tephra to the island.

This evidence is reinforced by the presence of broken murex shells in an area west and northwest of a Middle Bronze Age polythyron, which belonged to an

earlier phase of the settlement south of the Late Bronze Age town at Trianda. Murex was probably used in a variety of ways both during this early period and in Late Bronze Age IA. The purple pigment is certainly connected with the polychrome wall paintings, while the shells were used for the decoration and strengthening of the floor plaster in the Middle Bronze Age polythyron. Elsewhere it was used for dyeing fiber and textiles, and perhaps as a supplement to local kitchens.

Extensive layers of crushed murex shells also attest to the existence of a well-organized purple workshop south of the Hellenistic fortification in the ancient city of Rhodes. The installation was excavated in 1979/1980 and consisted of several mainly open-air spaces and rooms, including a system of cisterns, three kilns, a well, and an elaborate system of built channels and clay pipes. Study of the individual spaces of the workshop, which was used from the 2nd c. BC to the 2nd c. AD, revealed several details of the dye extraction process described by Pliny the Elder. Such methods had been used to produce the valuable pigment since the prehistoric period on the island and continued into the Hellenistic and Roman periods.

Purple dye production under royal management: evidence from the Cypro-Classical citadel of Ancient Paphos

Dimitra Mylona, Maria Iacovou

Published evidence for purple dye production on Cyprus is still sparse, but enough remains to document the existence of a local craft, practiced on the island since the Late Bronze Age. The Cypriot record has recently been enriched by the excavations of an extensive, specialized complex discovered on the plateau of Hadjiabdoulla, the Cypro-Classical citadel of ancient Paphos. The floor of Unit 2, a room situated in the midst of other units devoted to processing, production, and storage, was found covered with a 20 cm-thick layer of crushed purple shells (*Hexaplex trunculus*).

The meticulous excavation and total recovery of this deposit produced an enormous amount of material. The molluscan assemblage was largely homogenous taxonomically, and its analysis focused on features such as taxonomic synthesis, size of the surviving shells, degree of fragmentation,

presence of predation marks, etc. The position of Unit 2 and the nature of the other finds within the industrial complex, which was entered from the palace compound to the east, complement the zooarchaeological analysis and suggest that the extraction of the dye from purple shellfish would have been conducted on the nearby coast. The shells, already sorted and crushed, were then concentrated and stored in Unit 2 for secondary processing and use (e.g., for making hydraulic mortar).

The fourth-century ceramic material found with the crushed shells confirms that the precious dye was produced and, apparently, also consumed/marketed by the *basileis* (kings) of ancient Paphos. Although many more years of excavation will be required for a full “biography” of the industrial complex, the current evidence underlines the economic significance and social impact that purple dye production must have had for city-state authorities in the first millennium BC.

A possible Hellenistic-Roman purple dye installation in Eretria, Greece

Stephan Schmid

During excavations by the Swiss School of Archaeology at the Euboean site of Eretria, a series of “industrial” installations were discovered in a former habitation area. As a matter of fact, in a building that clearly was used as a typical Eretrian house in previous periods, important changes occurred during the Hellenistic and Roman periods. Water installations clearly increased, indicating that whatever activities were taking place in the area required significant amounts of water. Furthermore, shallow basins with waterproofed mortar were built into the rooms of the former habitation area. Most importantly for our purposes, large amounts of purple shells were discovered, complete ones as well as layers of crushed shells. The best parallels for the overall picture come from (purple) dyeing installations like the ones known from the cities destroyed by the eruption of Vesuvius in AD 79. However, it is necessary to narrow the search for contemporary parallels in order to gain a more precise picture. For the present contribution, we shall try to understand these installations not only by looking for similar structures in the Mediterranean, but also by placing them in the local and regional context.

Purple dye workshop on Agathonisi

Pavlos Triantafyllides

Excavations on the remote island of Agathonisi in the Dodecanese, Greece, have recovered an unexpected find. Part of an industrial building, linked to the production of dyes and to actual dyeing, was located near the southern fortification wall of a Hellenistic fort at Kastraki; these works are dated to the late Hellenistic and Early Roman period (1st c. BC – 1st c. AD). Vats at the site were found filled with large numbers of purple shells (*Hexaplex trunculus* and *Bolinus brandaris*), and some shell were stored in a stone basin. The rich deposits of shells leave little doubt that the vats were used for the production of purple dye.

A Roman purple dye workshop from Chania, Crete

Aggeliki Tsiggou

In 2002 excavations in the plot of G. Goniotaki on the northwest side of Chania revealed a purple dye workshop. This complex, which is still visible today in the basement of the building, includes two circular ovens. At the center of each oven there is a large cylindrical stone where metal vats were probably placed to heat up the dye. To the east of these ovens the dig uncovered a large, roofed room which contained four vessels. The pottery dates the workshop from the middle of the 1st c. AD to the middle of the 2nd c. AD. Within the workshop lay a large tank on the northeast side, an aqueduct, and a well that was filled with crushed and whole murex shells. The majority are *Hexaplex trunculus*, and they were found together with other species, such as *Euthria corneum*, *Phorcus turbinatus*, *Cerithium vulgatum*, *Fasciolaria lignaria*.

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