

**LEIDEN UNIVERSITY–NETHERLANDS INSTITUTE OF ATHENS (NIA)-EPHORATE
OF ANTIQUITIES OF EUBOEA (CHALKIS)–NATIONAL RESEARCH CENTRE
'NCSR DEMOKRITOS'**



CONSERVATION AND PHYSICO-CHEMICAL STUDY OF METAL ARTIFACTS FROM THE CRUSADER PERIOD

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ONLINE CLASSES & WORKSHOP



Online classes: 8 September-15 October 2020

Practical Workshop (Athens–Chalkis, GR): 1–6 March 2021

INTRODUCTION

During **8 September-15 October 2020**, online classes will be streamed (live) and during **1–6 March 2021** a practical workshop will take place at Athens in Greece for the **‘CONSERVATION AND PHYSICOCHEMICAL STUDY OF METAL ARTIFACTS FROM THE CRUSADER PERIOD’**. The course will be organized by the Faculty of Archaeology, Leiden University (NL), the Netherlands Institute at Athens (NIA), the Ephorate of Antiquities of Euboea (Chalkis), and the Greek Research Centre/Laboratory ‘NCSR Demokritos’ at Athens.

This course provides a unique opportunity for BA, MA, RMA and PhD students to gain more knowledge and a hands-on experience in conservation of metal artifacts from Crusader period. It guides the participants through the Crusader history and technology of Byzantine metal objects in Greece, and through stages of the study, conservation, restoration and documentation of archaeological artifacts. The practical classes will be based on authentic metal finds from Euboea (GR). In addition, a first approach of physicochemical analyses will be presented. All teaching will be in English. In Greece, accommodation will be provided by the Netherlands Institute at Athens (NIA) and everything will be carried out with consideration of the acquired social distancing.

By the end of the course the participants will:

- get knowledge on the exchange of goods and the use of metal objects;
- learn about shapes, types and technology of Byzantine metal objects & improve their knowledge on Byzantine and Crusader history and archaeology in Greece;
- get acquainted with the basic methods of documentation for the conservation and restoration of Byzantine metal objects;
- learn about the necessity of physicochemical analyses on metal objects;
- meet professionals who not only work in metal objects conservation and in Byzantine Archaeology in Greece, but who also work in physicochemical analyses of Byzantine, Medieval and Post-Medieval metal objects.

THE ONLINE CLASSES

8 September-15 October 2020

1° Course: 8 September 2020 (1.5 h)

History of metallurgy.

2° Course: 10 September 2020 (1.5 h)

Examination of metal objects - Identification of Metalworking techniques.

(Metal properties, Grain structure of metals, Variety of metals, Metal plating, Metal finishes).

3° Course: 15 September 2020 (1.5 h)

Corrosion of metal artifacts.

(Why metals corrode, Metals most prone to corrode, Stable surfaces versus active corrosion), Recognizing types of corrosion on common metals (Iron, Copper, Gold, Lead, Nickel, Silver, Aluminum, Tin, Zinc, Plated metals and alloys), Causes of metal corrosion (Water, Relative humidity, Pollutants and contaminants, Gaseous pollutants, Dust, fingerprints, salts, fatty acids, polish residues, Combined effects of pollutants and contaminants with relative humidity), Other agents of deterioration (Physical forces, Thieves and vandals, Dissociation, Fire, Incorrect temperature and Relative Humidity).

4° Course: 17 September 2020 (1.5 h)

Preventive conservation strategies.

Strategies for protecting against corrosion: the multi-level approach, Strategies for the whole collection, Protect against liquid water, Keep relative humidity levels moderate, Filtration, Dust protection, Safe storage and display products, Contact or proximity with museum objects that produce emissions.

Strategies for enhanced protection: Microenvironments, Enclosure materials, Airtightness, Desiccants, Anoxic environments, Pollutant sorbents, Active mechanical systems, Coatings, Polishing.

Metal artifacts are sensitive to environmental conditions such as temperature, humidity, air pollution and exposure to light and ultraviolet light. They must be protected in a controlled environment where such variables are maintained within a range of damage-limiting levels. Preventive conservation is an essential responsibility of members of the museum profession to create and maintain a protective environment for the collections in their care, whether in store, on display, or in transit.

5° Course: 22 September 2020 (1.5 h)

Interventive Conservation techniques and materials (Surface cleaning). - PART 1

6° Course: 24 September 2020 (1.5 h)

Interventive Conservation techniques and materials (Fixing, Soldering, Filling, Aesthetic restoration, Protective Coatings of metal artifacts). - PART 2

The most common procedure in conservation and restoration of metals is the cleaning process. This process can be distinguished between mechanical, chemical, electrochemical, ultrasonic, plasma and laser cleaning. Furthermore, an expert who experienced in Fixing, Soldering, Filling, Aesthetic restoration, Protective Coatings of metal artifacts know specific techniques, recipes, and/or methodological details which contribute to current condition issues or which may affect the success of potential treatments or impact of different environments. Such skills can also give conservators the confidence to conduct more extreme, yet ultimately beneficial, treatment steps e.g. the safe dismantling and reconstruction of a metal artifacts to remove rust and treat active corrosion on otherwise inaccessible internal fittings.

7° Course: 29 September 2020 (1.5 h)

Non-invasive physicochemical analysis of metal artifacts. - PART 1

8° Course: 1 October 2020 (1.5 h)

Non-invasive physicochemical analysis of metal artifacts. - PART 2

Non-invasive physicochemical analysis used to analyze metal artifacts and collect data about composition, stratigraphic structure, the mapping of surface, the colours, the weathering layers and the surface patinas. Furthermore, they are important for understanding the alterations and conservation works. Finally, they can be valuable for solving issues of identification or authentication. These techniques are non-invasive, meaning that no sampling is necessary, and are obviously non-damaging to the metal artifacts (Optical Microscopy, UV-Vis-NIR, FCIR and Radiography).

9° Course: 6 October 2020 (1.5 h)

Invasive physicochemical analysis of metal artifacts. - PART 1

10° Course: 8 October 2020 (1.5 h)

Invasive physicochemical analysis of metal artifacts. - PART 2

Invasive physicochemical analysis used to collect data about composition, the quantity of layers, the technical construction, the qualitative and quantitative analysis of chemical elements and the origin. These techniques are invasive, meaning that sampling is necessary. They can also be valuable for solving issues of identification or authentication (Scanning Electron Microscopy, X-Ray Fluorescence Spectroscopy, X-Ray Diffraction Spectroscopy, Raman Spectroscopy, FTIR).

11° Course: 13 October 2020 (2 h)

Students presentation and Case studies.

12° Course: 15 October 2020 (2 h)

Students presentation and Case studies.

THE WORKSHOP

1–6 March 2021

During the workshop students start their training with original artifacts once they reach to an acceptable level of skill, accuracy and precision. Most participants will be able to master conservation and restoration techniques within this workshop, and will complete work on 2 artifacts by the end of the program, depending on the initial state of the objects' conservation, the necessity of conservation treatment and the individual performance of the student. The participants should present their results on the last day of the workshop.

The practical Workshop includes four modules:

1. Lectures on the history and technology of Byzantine metal objects, on preventive and on physicochemical analyses of them.
2. Practical work in the documentation and conservation of authentic metal finds from Euboea (GR), dated to Byzantine and Crusader period.
3. Study visits to the Archaeological Museum of Athens, the Acropolis Museum and the Greek Research Center / Laboratory 'NCSR Demokritos' at Athens.
4. Presentation of the students' output of the workshop.

The major workshop's activities:

The main goal of this program is to provide students theoretical knowledge on Byzantine metal objects, as well as the conservation of metal objects. In addition, hands-on training experience on preventive conservation will be applied. For a better study of the artifacts, physicochemical analyses are carried out in the 'Demokritos Research Center / Laboratory' at Athens, which aims to a better diagnosis of the construction technology, the pathology and the damages of the objects under study.

The workshop is completed with the writing of a 'condition report, and documented with photographs and drawings. Another essential part of the workshop comprises the conditions of exhibition and storage of archaeological artifacts in museums according to international standards.

GENERAL INFORMATION

Project type: Online Classes and Practical Workshop ‘**CONSERVATION AND PHYSICO-CHEMICAL STUDY OF METAL ARTIFACTS FROM THE CRUSADER PERIOD**’ at Athens-Chalkis, including the basic principles of physicochemical analysis of metal objects and the importance of physicochemical methods in the study and conservation of metal objects.

For: BA, MA, RMA and PhD students in metal objects conservation and in archaeology (both beginners and advanced students).

Duration of workshop:

The Online classes: 8 September-15 October 2020.

The Practical Workshop (Athens–Chalkis, GR): One week from Monday 1 March (9.00 am) to Saturday 6 March 2021 (15.00 pm).

Application deadline: 31 August 2020. The online courses are open to students, but the practical workshop in Athens is for max. 10 students. For these last students it is obligatory to do the online classes in advance as preparation for the practical workshop. All teaching will be in English.

Application: application forms can be downloaded from the website of the Netherlands Institute at Athens (NIA): see www.nia.gr. Completed forms (including a motivation letter) should be sent before 31 August 2020 to: nia@nia.gr.

Venue: Netherlands Institute at Athens (NIA); the Ephorate of Antiquities of Euboea (Chalkis); Research Center / Laboratory ‘NCSR Demokritos’ at Athens.

Costs: The fee of the online classes is 150 €, and the fee of the practical workshop is 250 €. The practical workshop includes tuition, teaching materials, room and board at the Netherlands Institute at Athens, including 24-hour access to the NIA Library. The participants are supposed to pay their tickets to Athens and their meals during the workshop.

Visits: Archaeological Museum of Athens, Acropolis museum.

Workshop coordinator:

Prof. Dr. J.A.C. Vroom, Archaeology of Medieval and Early Modern Archaeology in Eurasia, Faculty of Archaeology, Leiden University (NL).

Instructor:

Adamantia Panagopoulou, PhD Candidate at Leiden University,
External researcher at Institute of Nanoscience and Nanotechnology; ‘NCSR Demokritos’

Collaborators:

Dr Ag. G. Simosi, Director of the Ephorate of Antiquities of Euboea.

Fani Stavroulaki, Head of the Department of Byzantine and Post Medieval Period at the Ephorate of Antiquities of Euboea.

Dr. Alexandra Kostarelli, Archaeologist, Ephorate of Antiquities of Euboea, Chalkida.

Giorgos Pappas, Head of the Department of Conservation laboratories at the Ephorate of Antiquities of Euboea.

Dimitris Karamouzas, Conservator of Antiquities and Works of Art at the Ephorate of Antiquities of Euboea.

Dr. Winfred van de Put, Director of Netherlands Institute at Athens (NIA).

Dr. Hein Anno, Researcher at the Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos" (GR).

Dr. Filippaki Liana, Researcher at the Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos" (GR).

Dr. Georgios P. Mastrotheodoros, Postdoctoral researcher, NCSR "Demokritos" & University of West Attica (GR).

Despoina (Depie) Kotzamani, Conservator of Antiquities and Works of Art at the Benaki Museum.

Artifacts used: Byzantine metal objects from Euboea (GR).

Minimum age: 18 years old

Language: English

Experience required: None

Special requirements: Good physical condition and command of manual operations. The average temperatures in the area are about 20-28⁰ C. All participants should bring clothes and cosmetics suitable for this weather. It is recommended that participants bring their laptops. All participants are expected to prepare for the workshop by reading at least the notes that will be sent to them (*some notes will be sent by e-mail to all registered students before the beginning of the project*) and other recommended readings. Participants will use tools and equipment available at the site and are not expected to bring any additional equipment.

All participants will receive:

- Project notes (in a PDF version by e-mail).
- Certificate specifying the fieldwork hours, educational modules, and sites visited.
- T-shirt.
- The Online classes (2.5 ECTS), the practical Workshop (2.5 ECTS).

Partners in this project:

Faculty of Archaeology, Leiden University; Netherlands Institute at Athens (NIA); the Ephorate of Antiquities of Euboea (Chalkis); Greek Research Center/Laboratory 'NCSR Demokritos' (Athens).

Contact for more information:

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