

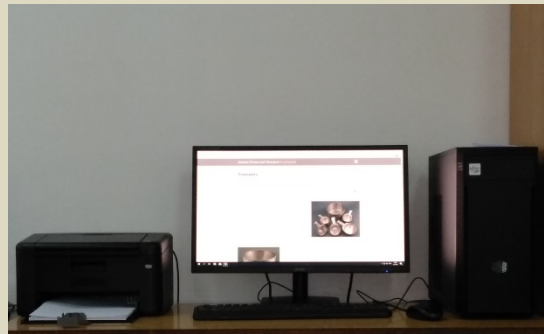
INFRAMAT

MODULE 2

Modern research infrastructure in support of
science, culture and technological
development

National Roadmap for Scientific Infrastructure (CMD No. 354 of 29.06.2017)
Financially supported by the Ministry of Education and Science (Contract D01-
155/28.08.2018).

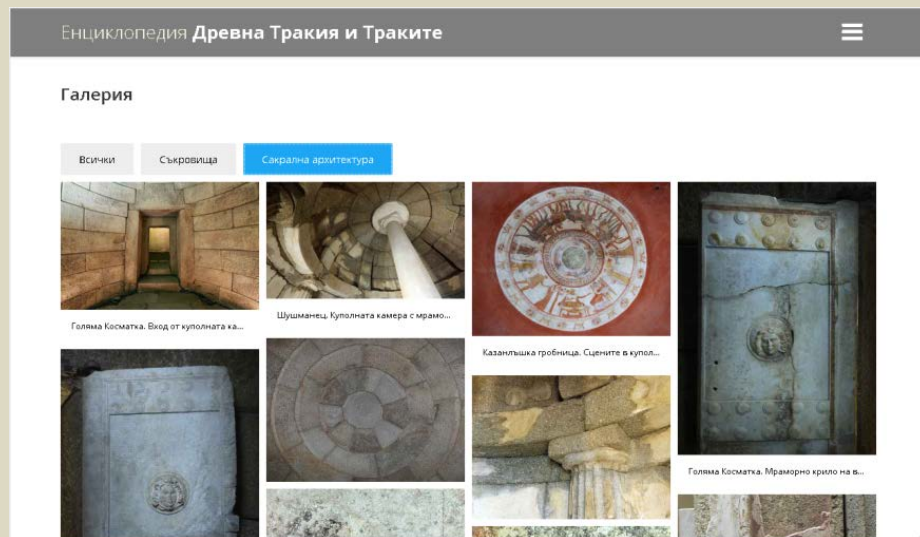
Electronic Database Online Encyclopaedia *Ancient Thrace and the Thracians*



Texts and images on different spheres of issues related to the history of Ancient Thrace in the large context of ancient history are presented in 17 categories in Bulgarian and English languages:

- Thracian religiousness and cultural relations are introduced through evidence in ancient literature, numismatics, epigraphy, art and sacral architecture;
- The Thracian language in Indo-European context (anthroponymy, hydronymy, toponymy) is presented in articles and based on different monuments: literary sources, epigraphic and numismatic data;
- 22 maps outline the Thracian territory during different periods, and highlighting important events in Thracian history, emblematic sites related to metallurgy and to metal deposits;

- The most important routes via Thrace from the Bronze Age to the end of the Roman period, used for the economic, political and cultural contacts of Thrace with the surrounding world;
- A glossary contains specific terminology; many ancient authors related to the studies are presented in a separate section;
- An extensive bibliography of the studies is compiled.



The **Electronic Database – Online Encyclopaedia *Ancient Thrace and the Thracians*** is intended to be used by researchers, students, scholars and by large audiences with interests in ancient history.



- Assessment of the physical and chemical state of ethnographic objects and the reasons for their destruction.
- Development of a strategy for conservation and restoration of museum objects, as well as of outdoor monuments from wood.
- Conservation-restoration intervention.
- Prepare a strategy for preventive conservation of museum objects.
- Preparation of documentation for exhibitions (eg status reports)



Trinocular microscope OZL 464 with 1.3MP microscope camera

- Equipment for preservation and restoration- to the microscope - computer, camera for documentation of restoration interventions, dirt and soldering iron, refrigerator for storing chemicals, ultrasonic washing machine, ironing system, textile-restoring textiles, dyeing tank, water purification system.

All these devices provide the opportunity for preliminary investigation and identification of causes for destruction; ensure a level of conservation-restoration intervention consistent with the best established practices.



- New industrial absorber for dust and small particles were purchased and installed using INFRAMAT funds.



- Renovation of Central Laboratory for Conservation and Restoration – a new ventilated fume-hood was installed.





New digital photography equipment for conservation and restoration documentations

- Nikon D850, FX-format, backside illumination sensor delivers superb 45-megapixel images at ISO 64-25600 (expandable to ISO 32-102400 equivalent)
- Set of Nikkor lenses.
- Set of filters for UV and IR photography.



- Photo captures in VIS, UV and IR electromagnetic waves



The renovation of the old ventilation system contributed for better working conditions and better environment for the analytical equipment.



The new microscope will give the possibility for better performing, according the best established practices, conservation process of silicate materials.



The new vacuum-drier is giving possibility for better consolidation both in the conservation processes and the process of sample preparation.

Being extremely fragile, archaeological materials needs extra care in the process of their consolidation and when using inhibitors of the deterioration process.

Bruker FT-IR module for contactless measurement in reflection for heritage conservation



1



2



3

The dedicated reflection module allows **contactless** and **non-destructive FT-IR** analysis of movable and immovable heritage objects like wall paintings as part of the research and in the conservation-restoration process.

The module makes it possible to perform analysis *in situ*. It **extends significantly the scope of the analysis** through cooperation with partner institutes in INFRAMAT, who have stationary apparatuses.

Specific Consumables

for the equipment in the Laboratory of trace analysis: ICP techniques and Radioanalytical methods

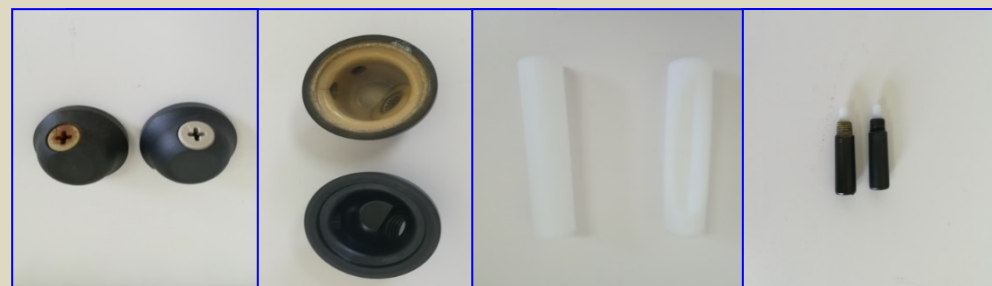
MW reaction system (Anton Paar, Multiwave 3000)



Specific consumables were purchased using INFRAMAT funds :

•MW reaction system:

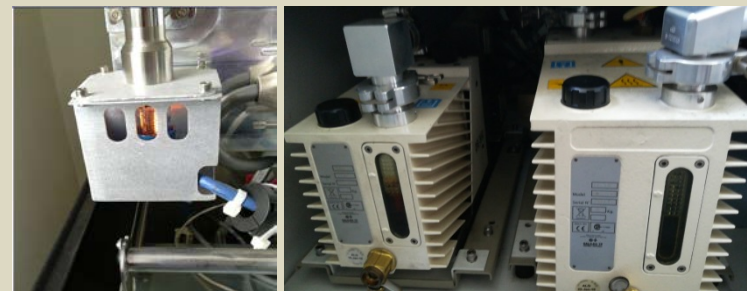
- Multiwave 3000 Safety Disks X 10359
- Multiwave 3000 Safety Disks Hold X 10358
- Multiwave 3000 Seal Holders X 10335,
- Rotor 16 Liner F100 TFM 2433



Maintenance and Repair of equipment in the laboratory of trace analysis: ICP-MS/ICP-OES SPECTROMETERS:



-Vacuum recovery of ICP-MS spectrometer



- Computer system repair
- ICP-MS/ICP-OES repair and software upgrade
- Testing and optimization of ICP-MS/ICP-OES characteristics – vacuum, sensitivity, mass resolution, lens voltage, detector voltage.
- Routine maintenance

Specific consumables were purchased using INFRAMAT funds:

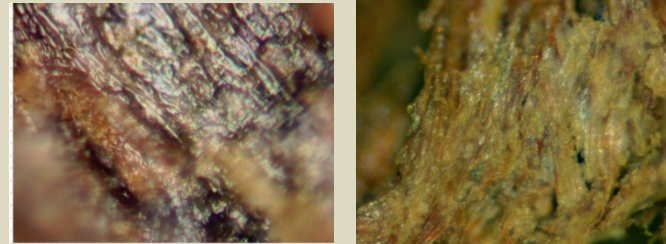
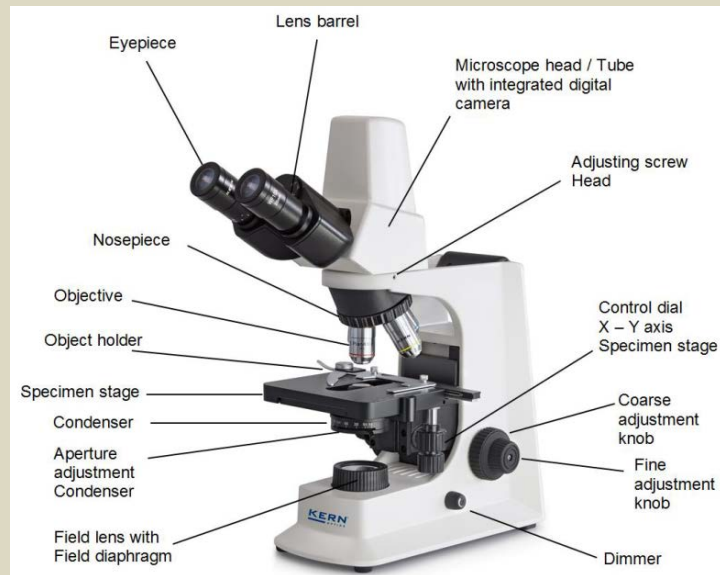
- ELAN DRC Smart Tune Solution – ICP-MS setup solution
- Single and multi-element calibration standard solution for ICP-MS/ICP-OES
- Certified reference materials - LGC6177, SPS-NU-WW2, NWTM-23.5, SPS-SW2
- Laboratory consumables
- Argon with high purity (99,999%)

Maintenance and Repair of *GAMMA SPECTROMETER*



- Servise- repair of HPGe detectors:
- Fault diagnosis
 - Vacuum recovery
 - Spectrometric test of the detectors.

Metallurgical microscope



KERN OKM-173

Version 1.0
01/2015



Used for:

- Observing various types of samples – metal, textile, ceramics, pigments, bones, etc.
- Enriching the documentation process with microscope study and photographs
- The **digital camera** and the **Microsoft VIS Software** present the opportunity of live streaming, movie making and taking pictures on multiple devices, which is major improvement in studying process.



Photography



Nikon D5600, lens – 18-105VR

- Photography studio assembly including options for outdoor photography, orto-photography and 3D reality
- Can be used both specialists from and students for archaeological or restoration documentation
- Allows students to experiment with light, color and manual modes in order to comprehend the vast possibilities photography contributes in archaeometry, restoration and archaeology

PROFESSIONAL EXPERTIZE

The laboratories and ateliers in the Institutions in Module 2 greatly contributed in the last year in the process of developing better and modern approach in the preservation and presentation of the cultural heritage. The objects, restored according to best established practices are exhibited in the permanent exhibitions in museums all over Bulgaria as well as temporary exhibitions in foreign countries.

The partners in Module 2 also contributed in the work of the Governmental Institutions, preparing reports for authenticity (using the available analytical equipment) of archaeological objects for lawsuits and pre-trial proceedings. The partners works on strategies for conservation-restoration treatment for some of the most important monuments in Bulgaria.

The partners in Module 2 are training young specialists and are giving them possibility for career development.

Vision for further development and work

Expansion of cooperation with INFRAMAT consortium members. Development of the scientific research in cultural heritage. Expanding cooperation with other organizations devoted to cultural heritage conservation and protection.