

Editorial to selected papers from the IMEKO TC24 Special Issue "Measurements in Cultural Heritage"

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# Editorial to selected papers from the IMEKO TC24 Special Issue "Measurements in Cultural Heritage"

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## Section: EDITORIAL

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Dear Readers,

this Special Issue, promoted by the IMEKO TC24 – Chemical Measurements, includes four papers focused on the topic of “Measurements in Cultural Heritage”. This field of application is particularly challenging for researchers focused on chemical analyses because it combines traditional issues related to Measurement Science such as traceability and uncertainty with the constraints related to the world of Cultural Heritage. Actually, when working on historical or archaeological artifacts, sampling is generally not always possible, so non-destructive analyses are preferred. Moreover, additional challenges are related to the development and use of portable instrumentation, which is required whenever the artifact under study can not be moved to the laboratory. For these reasons, many researchers in the field of Chemical Measurements work specifically on archaeometry and on various topics related to Cultural Heritage. The aim of this Special Issue is to present some of the possible approaches for this application field, stimulating new studies and new collaborations in this challenging yet fascinating research topic.

In the paper “A morphological and chemical classification of bronze corrosion features from an Iron Age hoard (Tintignac, France): the effect of metallurgical factors” [1], Giorgia Ghiara and co-authors investigate the corrosion products formed on archaeological bronzes coming from a Celtic deposit located in central France. The use of a multi-analytical protocol based on image analysis, electron microscopy, and Raman spectroscopy allowed the researchers to identify different corrosion morphologies, which were then related to different metallurgical factors such as alloy composition, microstructure, degree of deformation, and grain size.

In the paper “Photogrammetry and GIS to investigate modern landscape change in an early Roman colonial territory in

Molise (Italy)” [2], Manuel J. H. Peters and Tesse D. Stek present a composite Image-Based Modelling workflow to generate 3D models, historical orthophotos, and historical digital elevation models from images acquired decades ago. The proposed workflow was then applied to improve the interpretation of survey data from the early Roman colony of Aesernia (South of Italy).

In the paper entitled “Roman coins at the edge of the Negev: characterisation of copper alloy artefacts and soil from Rakafot 54 (Beer Sheva, Israel)” [3] Manuel J. H. Peters and co-authors report about the preliminary non- and semi-destructive analysis of copper alloys, corrosion products, and soil components from a Roman archaeological site in Israel. The use of a multi-analytical approach based on X-ray fluorescence, X-ray diffraction, scanning electron microscopy, and micromorphological analyses allowed the researchers to characterise the corrosion products and to correlate them to the soil composition.

The fourth paper is entitled “Reversible protective and consolidating coatings for the ancient iron joints at the Acropolis monuments” [4]. G. Frantzi and co-authors present a corpus of measurement methodologies used during a multidisciplinary project, aiming at the protection and conservation of ancient steel joints of the Acropolis monuments, undertaken by the Acropolis Restoration Service (YSMA). Different coating systems were applied on metal coupons, characterising their physicochemical properties and the protection performance against accelerated corrosion test. Then a 1-year test was carried out, exposing the coated samples outdoor at the monument site. Results allowed the researchers to propose one of the tested coating systems as candidate to protect metal artifacts from atmospheric corrosion.



This brief excursus about the papers composing this Special Issue shows the great variety of themes and approaches encountered when dealing with “Measurements in Cultural Heritage”.

We hope that these articles will stimulate your interest and that you will enjoy your reading.

Tatjana Tomić  
Leonardo Iannucci  
Leila Es Sebar  
Special Issue Editors

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