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Editorial to selected papers from the 2022 IMEKO International Conference on 'Metrology for Archaeology and Cultural Heritage'

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Dear Readers,

This Special Issue collects the extended version of some of the contributions presented at the 2022 IMEKO International Conference on Metrology for Archaeology and Cultural Heritage, held in Cosenza (Italy) from the 19th to the 21st of October 2022. This international conference brought together experts with different expertise but united by the interest in the characterization and conservation of Cultural Heritage (CH). The topics of data acquisition, interpretation, and reliability have been addressed during the event.

The conference promoted exchanges of ideas and information, encouraging collaborative networks, and updating innovations in archaeometry for archaeologists, conservators, and restorers, as well as for chemists, physicists, and engineers. Considering the wide interdisciplinarity of the CH field, the Conference participants addressed numerous topics, focusing their attention on the most important metrological issues.

In this special issue, we present original and high-quality research papers dedicated to the knowledge of materials and promoting emerging methodologies, applications, and technological solutions for measurements, in the field of CH. In the following, the published papers will be individually presented.

Collina et al. [1] present the results achieved within the development of a Virtual Reality (VR) application to perform dives in the Christoforos Shipwreck (Skopelos island, Greece). The research focused on the application and the adjustment of a survey methodology developed for ancient shipwrecks to a modern one. The data showed the potential of underwater technologies, also promoting knowledge and innovation in the diving industry and improving tourists' experience of underwater cultural heritage sites.

Altobelli et al. [2] describe the experimentation carried out for the removal of a polymeric film of aged Paraloid B72® originally placed to protect some wooden artifacts belonging to the Egyptian collection of the National Archaeological Museum of Naples (MANN), by using PVA-Borax hydrogel. Several tests and analytical techniques were performed before validating the effectiveness of the selected method and compounds as removal agents against aged Paraloid B72® from wooden artifacts.

Muñoz del Pozo et al. [3] present the preliminary results obtained as part of an ongoing project aimed at studying the lithic raw materials of the Teixoneres Cave (Moià, Barcelona), identified as a diachronic succession of human and carnivore occupations. Different lithic materials have been characterized macroscopically and microscopically with the aim of establishing the mobility patterns of Neanderthals and verifying their type of settlement. The research aims to create a geological/lithological map of the area, also useful for future studies on the supply of lithic raw materials in the region.

The paper by Conti et al. [4] presents the data obtained by using a GIS-based approach for a paleogeographic reconstruction of the coastal area around Grotta dei Santi (Grosseto, Italy) during the Neandertal occupation. Through the combination of geological, bathymetric, and sea-level fluctuations data the methodology adopted allowed the Authors to reconstruct the landscape around the cave at about 45 ky BP, offering useful information to frame the mobility models of the Neandertals, the strategies for resources capture and landscape management, in the studied area.

Soto et al. [5] show the results achieved within the MobiLithics project aimed at characterizing the lithic resources exploitation and territorial adaptive responses among the last Homo neanderthalensis and Homo sapiens to different climatic, cultural, and biological dynamics. Two critical regions of the Upper Pleistocene, i.e., North Africa and the Iberian Peninsula, have been selected as case studies of the project. Through a complementary and multi-analytical approach, based on geospatial modelling, petrographic and geochemical analyses, multivariate statistics, and predictive models, the Authors determined variability in resource supply and territorial structure in the two regions.

Casazza et al. [6] investigate a procedure for the vibro-acoustic characterization of violins, named vibro-acoustic fingerprint, as an example of characterisation of a wooden musical instrument. The procedure was applied, as a case study, to an Italian contemporary violin and showed to be useful in detecting the influence of instrument ageing on its vibro-acoustic properties, as well as a support to the restoration of historical instruments.

Camassa et al. [7] present an experimental and numerical investigation on the dynamic identification of damage in slender masonry structures using the innovative remote sensing technique of ground-based radar interferometry. The results show that the radar interferometry technique can be effectively applied not only to identify the first natural frequencies of a structure, but also to monitor the health status of the structure by detecting possible damage scenarios. The case study of San Cataldo's masonry lighthouse, which is located in Puglia (Italy), is used to support the proposed approach.

The paper by Ricca et al. [8] presents some of the results from the project "An Ocean of Science", which encourages effective interventions and innovative educational paths to support the growth of knowledge and skills in schools. The purpose of the study was to evaluate the effects and involvement of secondary school students during several educational laboratory activities, focusing on the development of their practical skills and training. Results showed that the laboratory teaching and the scientific instruments used in the "An Ocean of Science" project at various secondary schools have a great importance for the transferability of knowledge and for meaningful learning in marine science issues, and specifically for underwater cultural heritage and the marine environment.

In the paper "Vibroacoustic heritage monitoring with a standalone system" [9], Barone et al. describe the results of the preliminary application tests for a stand-alone prototype data acquisition system. The system was developed for monitoring and characterizing the vibroacoustic landscape and, in particular, the vibroacoustic heritage, such as musical instruments, performing spaces and areas of historical relevance. The application of the proposed standalone solution could serve, in the future, to monitor the vibracoustic signals, with the aim of characterizing ancient monumental architectures and other assets of historic and cultural interest, as well as cultural heritage sites and historic areas.

M. P. Albanese et al. [10]characterise a marble bas-relief seized by the Cosenza Carabinieri Unit for the Protection of Cultural Heritage and Anti-Counterfeiting (Calabria, Italy). The study aimed to collect data on the authenticity of the artwork, providing indications about the compositional features of the sampled materials. Based on SEM-EDX and FT-IR techniques, the Authors gave new insights on the historical context and on its production.

In the paper "MicroCT imaging of canid diaphyses: bone ontogeny from a zooarchaeological and digital perspective" [11], F. Boschin et al. analyse developmental patterns of the diaphyseal structure in canids. Variables describing bone structure were measured by inferring bone development through the observation of cross-sections. The results show how bone structure changes over the course of a lifetime and how this approach makes it possible to separate young and older individuals. This has a great importance from a zooarchaeological point of view to estimate the age at death of fragmentary animal remains and to discriminate taxa characterised by similar morphology but different adult body size using a non-destructive approach.

A. Taliano Grasso et al. [12] carry out a comprehensive characterization of Roman tiles, in order to investigate their provenance. Different analyses were performed to determine their minero-petrographic features and their geochemical composition, to identify the extraction area of the raw materials and the technological aspects related to the processing of the clay. Results have a relevant impact to understand types and methods of production, owners and clients in this part of the Bruttii territory, in the area of Cosenza (Calabria, Italy).

Developing protective coatings in the field of cultural heritage is not an easy task for restorers and scientists. Indeed, apart from the usual requirements such as protection effectiveness and durability, additional ones are demanded, such as coating reversibility and its full transparency. Bergomi et al. [13] present the characterisation of a commercial coating, composed of titanium dioxide nanopowders dispersed in an acrylic polymer. The protection effectiveness has been assessed after depositing the coating on different substrates, namely Carrara marble, Noto stone, and Comiso stone.

We hope you will enjoy your reading.

Michela Ricca
Leonardo Iannucci
Yuval Goren

Guest Editors for the Special Issue

REFERENCES

[1] M. Collina, A. Lagudi, F. Bruno, V. Cosentino, R. Peluso, A. Ktistis, A. Manglis, A Virtual Reality application for the exploration of a modern shipwreck: the case study of the Christoforos wreck, Acta IMEKO, vol. 12, 2023, no.3, pp. 1-7. DOI: 10.21014/actaimeko.v12i3.1506

[2] A. Altobelli, P. Cennamo, G. Trojsi, M. R. Barone Lumaga, A. Carpentieri, G. Fatigati, Experimentation of a PVA-Borax hydrogel for the removal of Paraloid B72® from artifacts of archaeological interest from the National Archaeological Museum in Naples, Italy, Acta IMEKO, vol. 12, 2023, no.3, pp. 1-8. DOI: 10.21014/actaimeko.v12i3.1501

[3] A. Muñoz del Pozo, B. Gómez de Soler, G. Bustos-Pérez, M. Gema Chacón, A. Picin, R. Blasco, F. Rivals, A. Rufà, J. Rosell, Analysis and classification of Middle Palaeolithic lithic raw materials from teixoneres cave: project overview and initial results,

Acta IMEKO, vol. 12, 2023, no.3, pp. 1-7.
DOI: 10.21014/actaimeko.v12i3.1494

[4] E. Conti, S. Arrighi, N. Bigliazzi, F. Boschin, A. Brindisi, K. Brogi, A. Burgassi, J. Crezzini, C. Dominici, L. Latragna, T. Luzzetti, G. Marciani, I. Martini, A. Moroni, S. Pitzianti, S. Ricci, M. Rossini, A. Salvi, S. Scaramucci, V. Spagnolo, Back to the Past. The paleogeography as key to understand the Middle Palaeolithic peopling at Grotta dei Santi (Mt Argentario – Tuscany), Acta IMEKO, vol. 12, 2023, no.3, pp. 1-8.
DOI: 10.21014/actaimeko.v12i3.1482

[5] M. Soto, J. Morales, H. Aouraghe, R. Sala-Ramos, M. Gema Chacón, MobiLithics: Fingerprinting the exploitation of lithic resources during the Upper Pleistocene, Acta IMEKO, vol. 12, 2023, no.3, pp. 1-10.
DOI: 10.21014/actaimeko.v12i3.1478

[6] M. Casazza, F. Barone, E. Bonisoli, L. Dimauro, S. Venturini, M. C. Masoero, L. Shtrepi, A procedure for the characterization of a music instrument vibro acoustic fingerprint: the case of a contemporary violin, Acta IMEKO, vol. 12, 2023, no. 3, pp. 1-6.
DOI: 10.21014/actaimeko.v12i3.1445

[7] D. Camassa, A. Castellano, M. Chiapperino, A. Fraddosio, F. Paparella, M. D. Piccioni, Dynamic damage characterization of slender masonry structures by radar interferometry: a case study, Acta IMEKO, vol 12, 2023, no.3, pp. 1-6.
DOI: 10.21014/actaimeko.v12i3.1449

[8] M. Ricca, L. Barbieri, M. P. Albanese, F. Bruno, A. Macchia, M. F. La Russa, The laboratory didactics in the training learning processes of sea sciences applied to cultural heritage and environment: the case of "An Ocean of Science" project, Acta IMEKO, vol 12, 2023, no.3, pp. 1-5.
DOI: 10.21014/actaimeko.v12i3.1458

[9] F. Barone, M. Casazza, R. Romano, Vibroacoustic heritage monitoring with a standalone system, Acta IMEKO, vol 12, 2023, no.3, pp. 1-6.
DOI: 10.21014/actaimeko.v12i3.1472

[10] M. P. Albanese, L. Randazzo, M. F. La Russa, A. Taliano Grasso, M. Paoletti, M. Ricca, Preliminary archaeometric analysis on a marble bas-relief of unknown origin, Acta IMEKO, vol. 12, 2023, no.3, pp. 1-5.
DOI: 10.21014/actaimeko.v12i3.1466

[11] F. Boschin, F. Bernardini, MicroCT imaging of canid diaphyses: bone ontogeny from a zooarchaeological and digital perspective, Acta IMEKO, vol 12, 2023, no.3, pp. 1-5.
DOI: 10.21014/actaimeko.v12i3.1476

[12] A. Taliano Grasso, S. Medaglia, R. De Luca, A. Bloise, S. Carinola, D. Miriello, Characterization and provenance of Roman tiles from the archaeological sites of Cariati, Scala Coeli and Terravecchia (Calabria, Southern Italy), Acta IMEKO, vol 12, 2023, no.3, pp. 1-7.
DOI: 10.21014/actaimeko.v12i3.1484

[13] A. Bergomi, V. Comite, P. Fermo, M. Ricca, M. Borelli, C. M. Belfiore, L. Randazzo, S. A. Ruffolo, M. F. La Russa, Performance evaluation of a commercial protective coating through field-exposure tests on three stone substrates, Acta IMEKO, vol 12, 2023, no.3, pp. 1-6.
DOI: 10.21014/actaimeko.v12i3.1521