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ABSTRACT BOOK

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resources, risks and future perspectives

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COVER IMAGE:

Pillow-lavas and pillow-breccias covered by red-green radiolarian cherts and reddish marly limestones (Middle-Upper Jurassic) in the Timpa delle Murge ophiolitic sequence (Pollino Massif, Basilicata) (Photo courtesy of G. Prosser).

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Testing the new Hypercolorimetric Multispectral Imaging method to understand pigment technology in ancient ceramics: the Graffita ware from Moliterno Castle (Basilicata region, southern Italy) case study

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Diagnostics applied to Cultural Heritage has developed exponentially over the years. Among the most important portable, non-invasive, and non-destructive diagnostic analyses there are multispectral surveys. The new multispectral imaging system, named Hypercolorimetric Multispectral Imaging (HMI), developed by Profilocolore (Laureti et al., 2019; Colantonio et al., 2021), is a non-invasive, rapid, and diagnostic technique that allows in-situ accurate and reproducible spectral reflectance measurements (between 300 nm and 1000 nm) to obtain seven monochromatic very high-resolution images. HMI analysis is based on the simultaneous exploitation of the UVA to NIR bands and can characterize surfaces in a more detailed way than using the standard colorimetry. The main feature of the system includes speed of execution, speed of calibration, radiometric and colorimetric accuracy, great wealth of analysis functions, and integration with other analysis tools and technologies. HMI is applicable in any context and on any type of artifact. In fact, the instrumentation, easily transportable and equipped with batteries that make it energy self-sufficient, allows data acquisition in any operating condition. The results obtained in a short time and with ease provide a vast amount of scientific information and measurements, in a precise and repeatable manner over time.

To date, the technology has never been applied in ancient ceramic studies. To further exploit the great potentials of HMI, its application in understanding pigment technology in medieval ceramics was tested. An innovative integrated analysis that combines HMI with Micro X-ray fluorescence, micro-RAMAN spectroscopy, and X-ray diffraction (PDXRD e μ−XRD) data is proposed for the identification of the compositional characteristics of glazes and decorations in the Graffita ware from Moliterno Castle (Basilicata region, southern Italy) attested at the 14th and 15th centuries (with the Courtesy of the Superintendence of Basilicata) (Annunziata, 2022; Annunziata et al., 2022). The technique of graffito ware has a remote eastern origin; transmitted from China to Persia in the 9th-10th centuries, it then moved from there to the Mesopotamian and Syrian areas, and finally to the Byzantine empire Glazed Graffita ware is generally characterized by a production process consisting of distinct stages: engobing, scratching, first firing, coloring, glazing, and second firing. Indeed, we strongly believe that such a complete piece of information is strongly needed to be used as an alluring source of information on technological know-how, production areas, and commercial relations as well as on commissioning and export/import, economic level, and social habits. Achieving this information involves a very complex job which, to be performed, requires the crossing investigation between classification, purely technological aspects, and diagnostic items: the analysis of pigments, both in ceramic glazes and/or decorations implies indeed a great complexity.

Annunziata E.M. (2022) - Archeologia e Archeometria della ceramica medievale: un approccio multidisciplinare per la diagnostica dei manufatti ceramici della Basilicata, Tesi di Dottorato di Ricerca, Università degli studi della Basilicata.

Annunziata E.M., Lubraco G., Bravo B., Medici L. (2022) - Archaeometry of Basilicata Graffita ware: provenance and technology 2022 IMEKO TC-4. Proceedings of the International Conference on Metrology for Archaeology and Cultural Heritage University of Calabria, Italy, October 19-21, 2022.

Colantonio C., Clivet L., Coquinot Y., Maury C., Melis M., & Boust C. (2021) - Integration of multispectral imaging, XRF mapping and Raman analysis for noninvasive study of illustrated manuscripts: the case study of fifteenth century "Humay meets the Princess Humayun" Persian masterpiece from Louvre Museum". EPJ Plus, 136(958). https://doi.org/10.1140/epjp/s13360-021-01909-8.

Laureti S., Colantonio C., Burrascano P., Melis M., Calabrò G., Malekmohammadi H., Sfarra S., Ricci M. & Pelosi C. (2019) - Development of integrated innovative techniques for paintings examination: The case studies of The Resurrection of Christ attributed to Andrea Mantegna and the Crucifixion of Viterbo attributed to Michelangelo's workshop. J. Cult. Herit., 40, 1-16. https://doi.org/10.1016/j.culher.2019.05.005.