

Insight into Ancient Roman polychrome surfaces: investigation campaign at “Parco Archeologico del Colosseo” (Rome, Italy)

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The project “Non-destructive analytical studies at Parco Archeologico del Colosseo (Rome, Italy)” aims at investigating the raw materials and technology employed by the Romans for the decoration of sculptures, *terracotta* and walls. In this framework, archaeometric investigations were carried out on the wall paintings of the recently discovered “Sphinx Room” at Domus Aurea and on marbles with polychrome and gilding traces (Figure 1). The two sculptures analysed are a male statue and a basket (*cista*), found during Palatino excavations [1].

The employed methodological strategy favoured the use of portable non-invasive instrumentation such as handheld X-Ray Fluorescence (hXRF), portable Raman spectroscopy and Diffuse Reflectance Infrared Fourier Transform Spectroscopy (DRIFTS). Where possible, micro-fragments of pictorial material were sampled and subjected to Raman and Infrared spectroscopy with laboratory instrumentation.



Figure 1: Details of male statue, *cista* and Sphinx Room vault during *in situ* analysis.

Gilding traces and pigments including white, earth tones, bright pink, different shades of green, blue and black were characterized. The combination of the information gained by the elemental and molecular techniques with portable and laboratory instrumentation allowed to confirm the colour palette traditionally identified for Roman paintings [2, 3]. Notwithstanding, the colours obtained by mixing different pigments based on the same key-elements should be further investigated, studying their distribution and the oxidation state of iron, copper and lead by means of X-Ray Absorption Spectroscopy (XAS), including chemical mapping.

References

- [1] - M.A. Tomei, M. Filetici (eds.) Domus tiberiana, scavi e restauri 1990-2011 Electa, Milano (2011).
- [2] - A. Paradisi et al., *Archaeometry* **54**, 6 (2012).
- [3] - M.L. Amadori et al., *Microchemical Journal* **118** (2015).