



NON DESTRUCTIVE TECHNIQUES FOR CULTURAL HERITAGE
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Scientific study of the sketch of Murillo's painting "Moses and the water from the rock of Horeb "

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With occasion of the “Murillo’s year” (5th centenary of his birth), the “Instituto Andaluz del Patrimonio Histórico (IAPH)” received the request from a private collector for the restoration and authentication of a sketch of the Murillo’s painting entitled “Moses and the water from the rock of Horeb”. During the intervention, several studies about the materials employed were carried out. After a detailed general inspection using multispectral techniques (visible, UV, IRR) some “pentimenti” were discovered. In addition, Macro X-ray fluorescence (MA-XRF) scanning technique was performed complemented by point XRF and stratigraphic analyses, in order to characterize the different elements of the paintings (ground layer, pigments and binders).

The methods used during the study will be described in this work, with particular attention to the mobile MA-XRF device [1], which provides real-time elemental imaging of the paintings. The results show that the ground layers were prepared in the usual fashion of the artist, using earths, calcium carbonate, iron oxide pigments and white lead. The polychromy is composed of lead white mixed with various pigments compatibles with those of the period. MA-XRF mapping allowed determining the spatial distribution and the combination of these pigments along the surface of the painting.

[1] F.P. Romano, C. Caliri, P. Nicotra, S. Di Martino, L. Pappalardo, F. Rizzo, H.C. Santos, *Anal. At. Spectrom.* (32), 2017, 773.