

From novelty to necessity: integration of MA-XRF scanning into technical studies research at the Getty

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Much of the attention generated by early studies employing macro-XRF scanning focused on the dramatic – those studies in which hidden paintings were revealed with elemental specificity, allowing digital color reconstructions of the hidden images to be generated. While the discovery of previously unseen works by important artists such as Rembrandt and van Gogh is exciting and important, XRF scanning can do much more than uncover hidden paintings. It can reveal previously undetectable details about the materials and techniques employed by artists to create works of art, provide trace material information important for understanding the provenance or processing of materials, serve as a means of documenting past conservation interventions, and provide a common platform for communication between scientists, conservators and curators.

This talk will introduce research being carried out by the Technical Studies Research team at the Getty Conservation Institute, in collaboration with conservators and curators from the J. Paul Getty Museum, which showcases how we are integrating MA-XRF scanning with other analytical techniques to address a wide range of questions in technical studies research. Examples that will be presented may include: the application methods for gold leaf in late medieval painting and manuscripts, the discrimination of nineteenth-century black drawing media, the study of underdrawings in illuminated manuscripts, and the painting techniques used in ancient mummy portraits. In addition, examples which test the limits of macro-XRF scanning will be discussed, such as objects with high relief or surface topography, and paintings in which a limited number of elements are present in multiple pigments. Last but not least, examples in which hidden features or underlying paintings have been revealed will also be included.

At the Getty, macro-XRF scanning is increasingly being utilized as a preliminary analysis method to provide an overall survey of the object and to inform the selection of additional analytical techniques to address specific questions. In this capacity, although its implementation is becoming routine, it is revolutionizing the way in which we conduct technical studies. By producing data as images, XRF mapping is opening up new avenues of inquiry, in particular for art historians and other scholars who are trained in the visual analysis of images. However, because an understanding of the underlying physics and chemistry by which the element maps are generated is necessary to insure an accurate interpretation, communication between scientists and curators/conservators is critical. As a result, we have developed closer, and more productive, collaborations in which the boundaries between the traditional roles of scientist, conservator and curator are being blurred.