

CONSERVATION TREATMENT AND AUTHENTICATION OF PAINTINGS WITH HANDHELD XRF ANALYZERS

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X-ray fluorescence (XRF) technology is burgeoning as a viable method for identifying inorganic pigments in paints and ground layers and currently is utilized for this purpose in a private Canadian fine art conservation laboratory. Many conservation scientists are using the Thermo Scientific NITON® XRF analyzer to explore how to sample most effectively for non-destructive testing. This project is studying the use of XRF applications to aid in treatments, such as overpaint removal, identification of original materials in filling and inpainting, and other methods, which will help with treatment and restoration decisions.

Traditionally, XRF spectroscopy has been used for rapid confirmation of pigment indicators, based on the pigments' elemental composition, to authenticate paintings and other fine art objects. For the purposes of this project, comparative studies were undertaken using both known forgeries and the original paintings. Exploratory findings will lead to further study relating to authentication and will be carried out by collecting pigment data as well as by comparing data to known paintings and known historic pigments.

Further, this project is investigating how handheld, nondestructive XRF spectrometers can lead to a better understanding of the artist's working methods and materials. This pursuit will help with mapping out the artist's underlayers, including *imprimatura* and first painting, as well as corrections in the image layer, thereby indicating optimal restoration methods.