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Quantification of chromatic integration of painted panel

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Using physical chemical techniques for investigation, conservation and restoration of works of art is unavoidable nowadays. Nuclear techniques are among the most sensitive methods of elemental and isotopic analysis. In this work Raman and Visible reflectance spectroscopy were used for quantification of the chromatic integration which is the key operation in conservation restoration process with the ability to enact the original aesthetics. Through scientific investigation, the color integration process becomes a method of objective aesthetic restoration providing the working parameters: the nature of the pigments and the surface application mode. Experimental panels with various pigments: raw Sienna, red ochre and burnt umber applied in several layers were analyzed. Accelerated aging and gamma irradiation of the wooden panels were performed to follow the stability of the watercolors in time. Raman spectroscopy was used to determine the chemical composition of watercolors used in conservation-restoration and in conjunction with visible reflectance spectroscopy to quantify the chromatic integration. Obtaining spectral parameters-pigment concentration calibration curves allowed the interpolation of data obtained from the original panel with those obtained from the experimental panels. This work was supported by an IFA-CEA grant, contr. no. C3-05/2013. The authors are grateful to Mr. Marian Rascov for Raman spectroscopy measurements.

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