

Supplementary Material

Development of a hyperspectral imaging protocol for painting applications at the University of Seville

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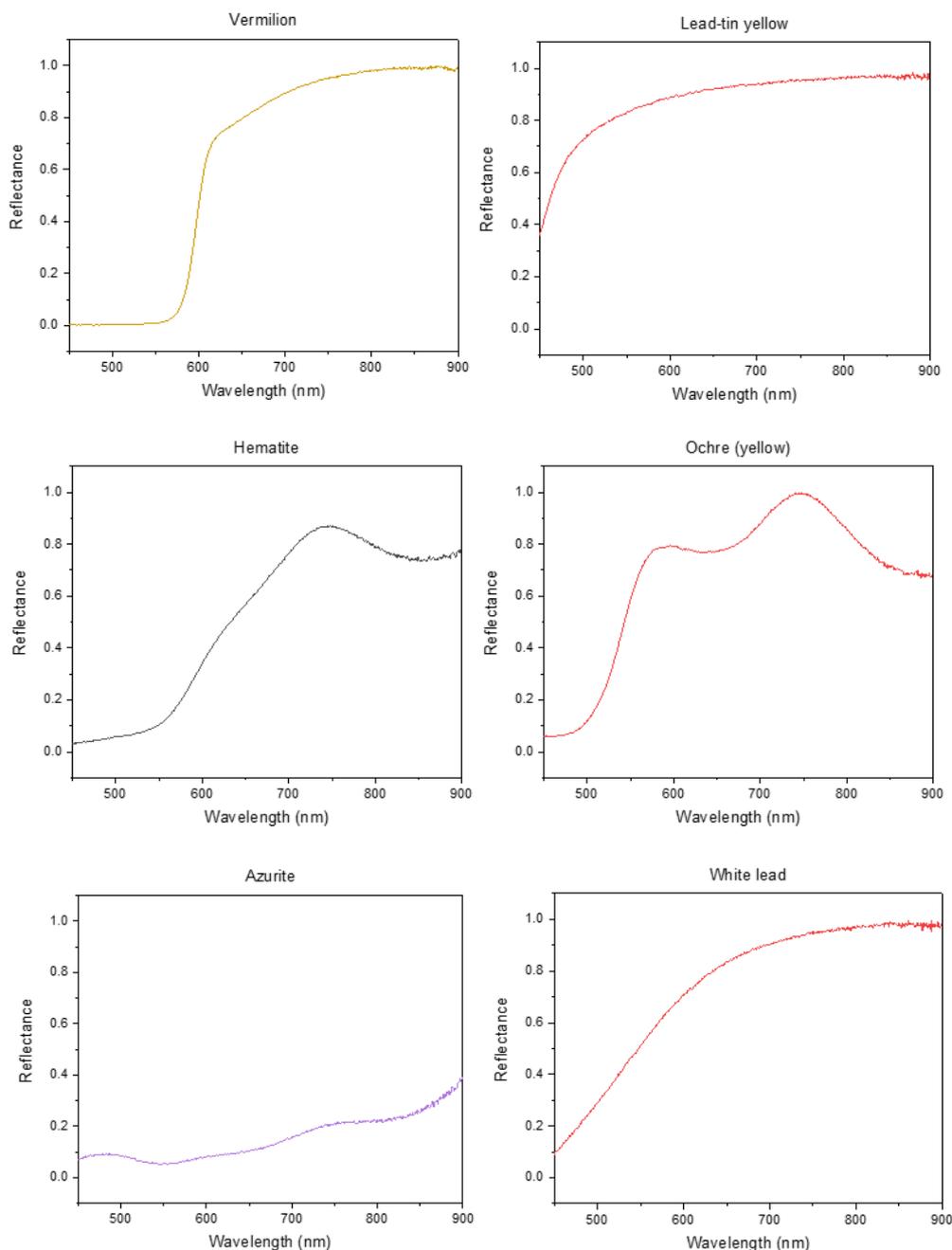


Figure S1 – Examples of the spectra obtained with the VNIR hyperspectral camera

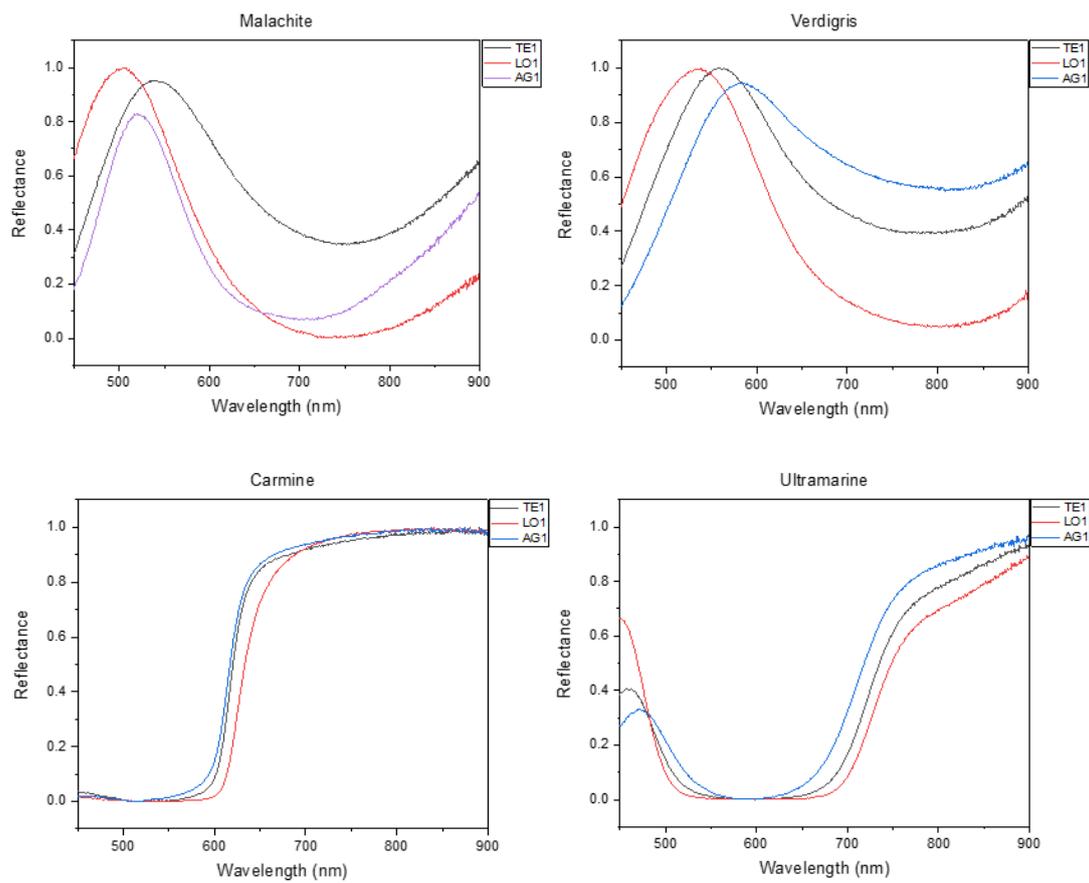


Figure S2 – Influence of the binder

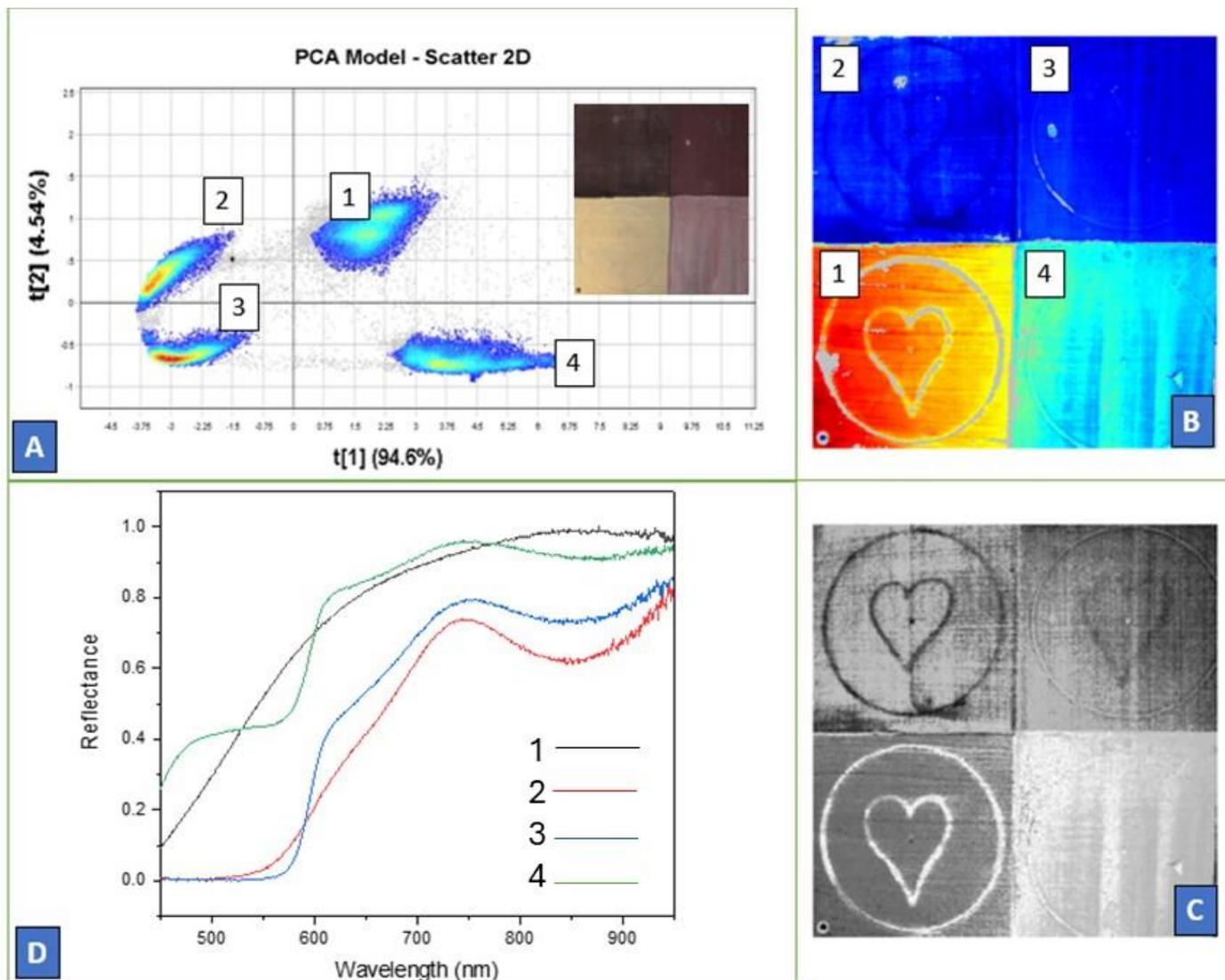


Figure S3 - Representative collage showing the data obtained from the handheld VNIR hyperspectral: the calibrated RGB image from panel W5 in the inset of the PCA graph (a), the false colour image (b), the extracted image at 900 nm (c), and the spectra from each square of the panel (d). Despite noisy information and similar colour assigned to the red pigments, the false colour image reflects the differentiation between lead white (1), hematite (2), vermilion (3) and lead-tin yellow (4) respectively found in the clusters of the PCA model graph. Regarding the drawings, the image at 900 nm (c) shows traces of the drawing under the third square and the lack of detection under the fourth area. Finally, the spectra (d) confirm the mixture between lead-tin yellow with the underneath layer of vermilion with the mixed information coming from the bump at ~500 nm for lead-tin yellow and the characteristic fingerprint of vermilion at 617 nm and the emerging peak of hematite at 743 nm.

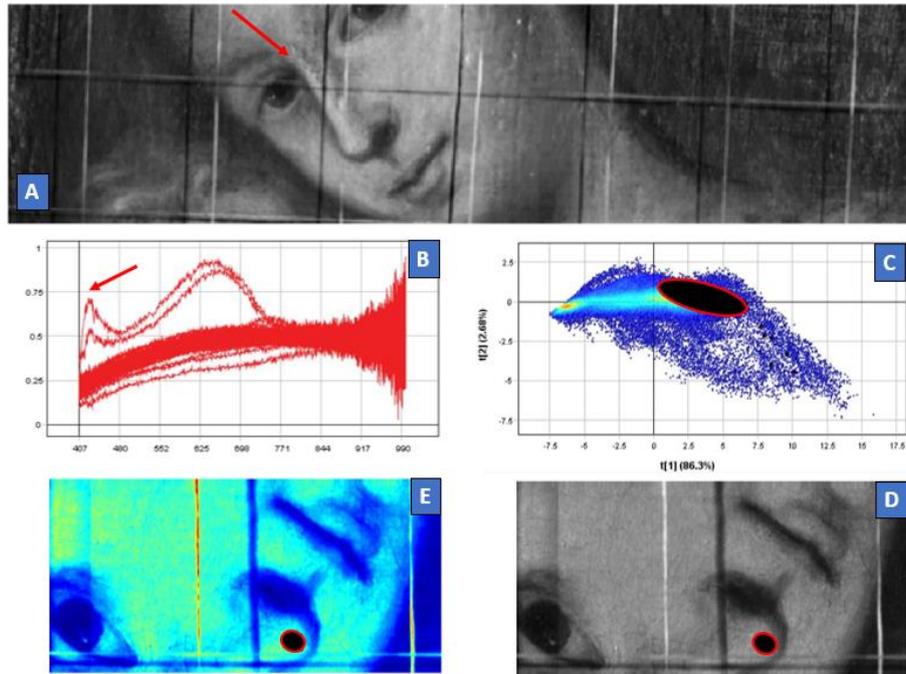


Figure S4 – Retouched areas identified when using the hyperspectral cameras: SWIR image showing enhanced roughness of the surface and the presence of retouches on the nose of the Virgin highlighted by the red arrow (a) and traces from titanium white identified at ~ 410 nm (b) among the spectra extracted from the black selection on the nose of the Virgin shown in the false colour image (e), the image obtained at 800 nm (d) and the PCA graph (c)