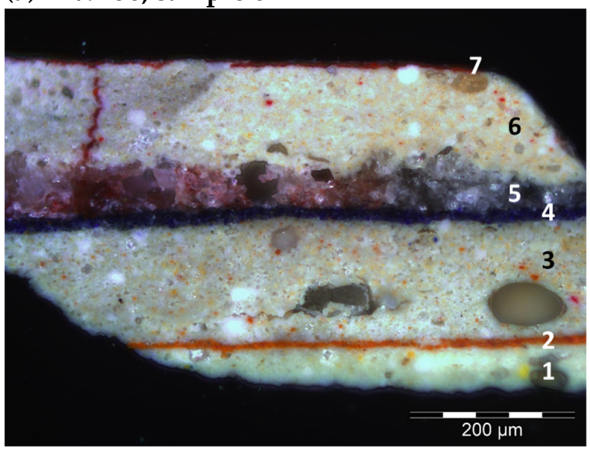
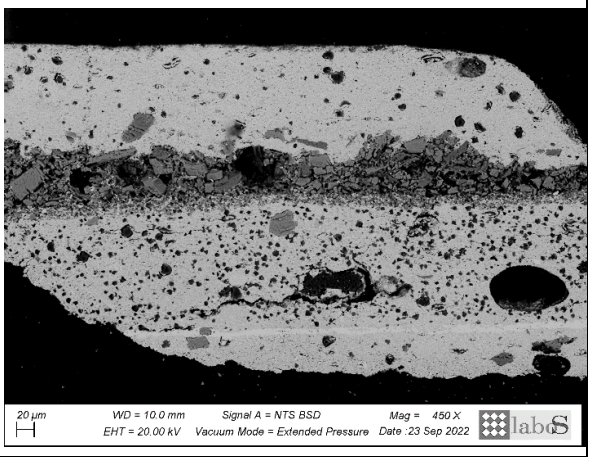
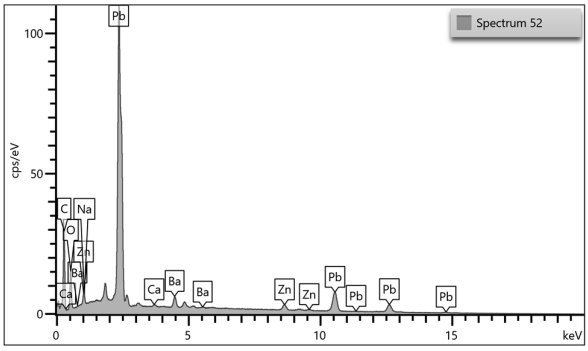
Supplementary Materials

(a) Inv. 450, sample 6

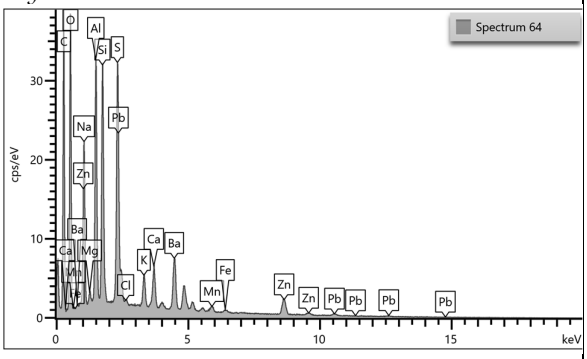




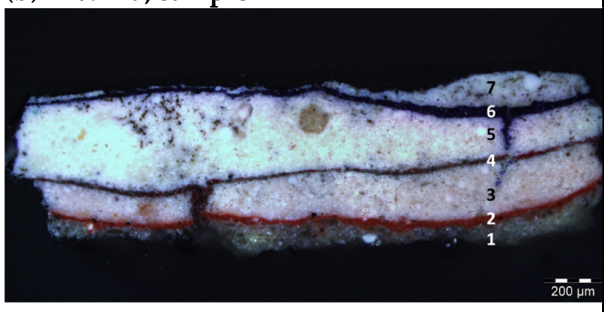
Layer 2: minium

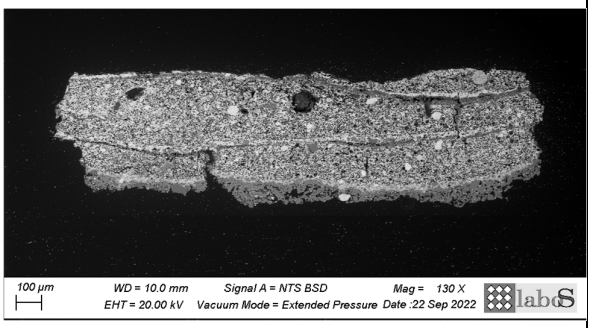


Layer 4: ultramarine blue

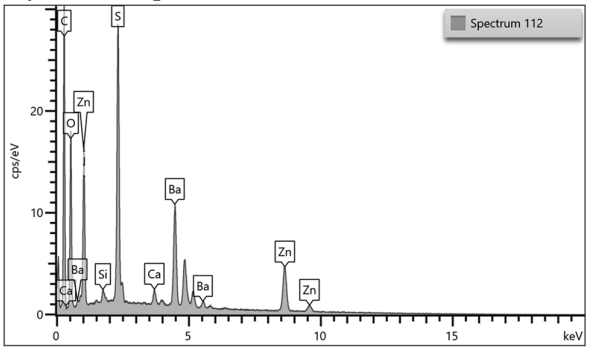


(b) Inv. 449, sample 11





Layer 5: lithopone



Layer 2: iron-containing red

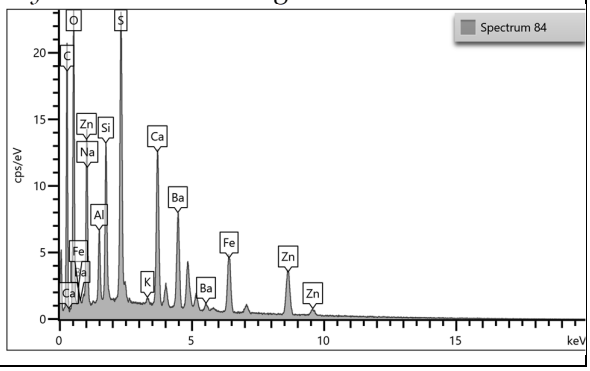


Figure S1 – Representative EDS spectra. (a) EDS spectra acquired on a cross section from Inv. 450, showing the presence of minium and ultramarine blue among other materials.(b) EDS spectra acquired on a cross section from Inv. 449, showing the presence of lithopone and an iron-containing red among other materials. The polarized light and BSE images obtained from the samples are also displayed above the corresponding EDS spectra.

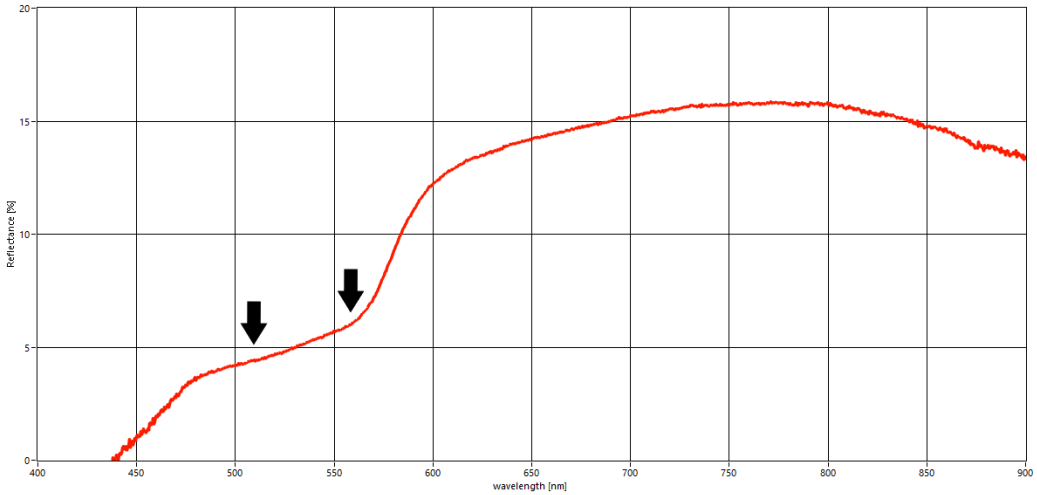


Figure S2 – Representative FORS spectra. FORS spectrum of a flesh tone from Inv. 453, suggesting the use of a mixture of earth pigments and red lake.

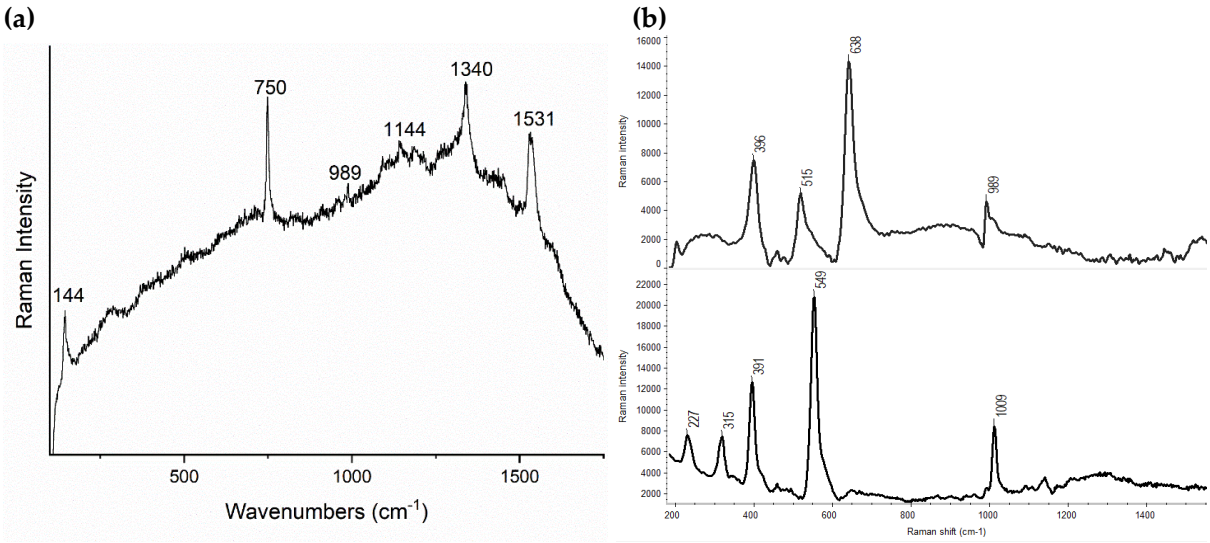
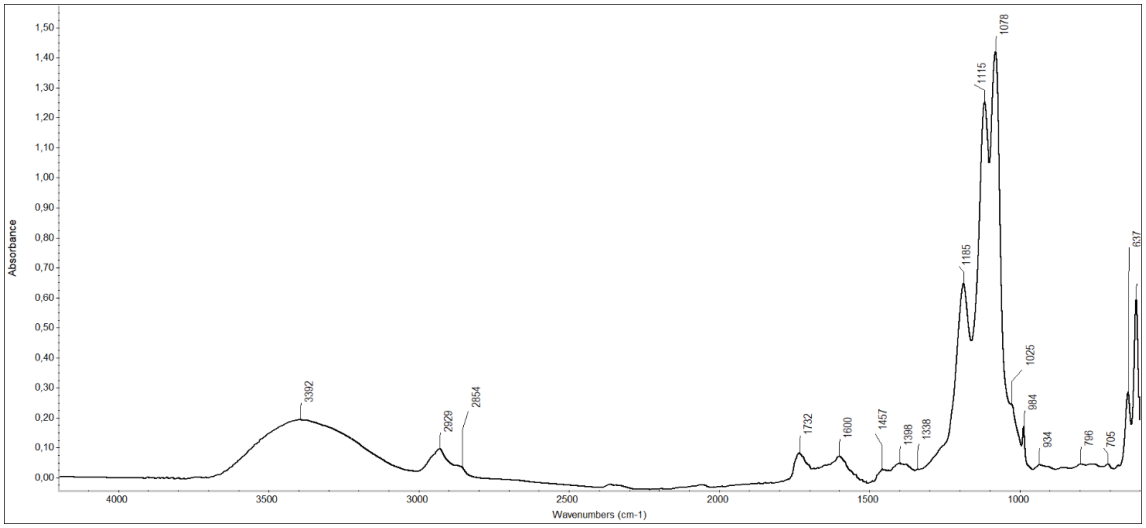
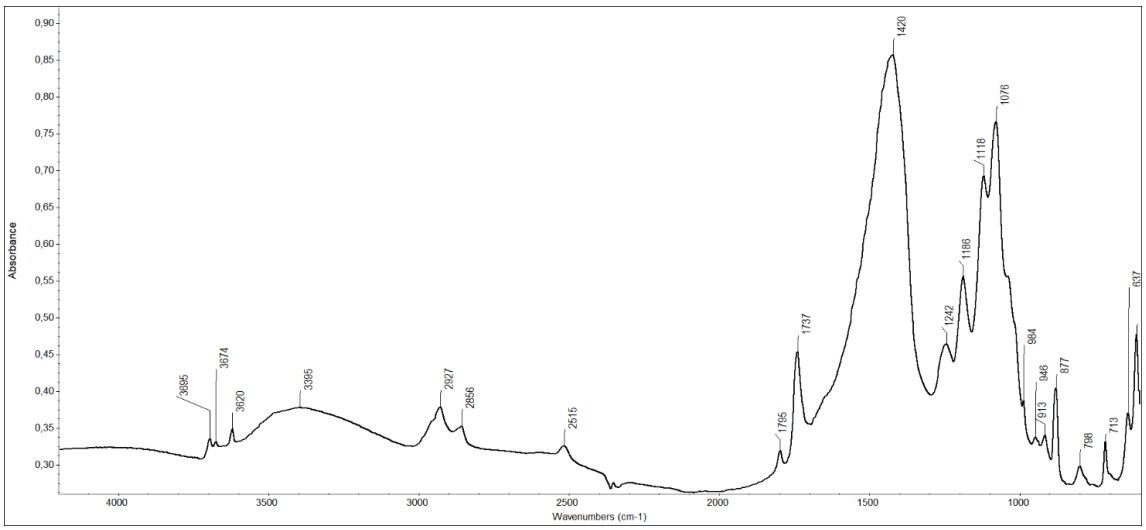


Figure S3 – Representative Raman spectra. (a) Raman spectrum of a sample of blue paint from Inv. 454, obtained with a benchtop system equipped with a microscope (courtesy of Raman Spectroscopy Laboratory, ISPC-CNR, Milan); relevant bands marked in the spectrum are assigned to phthalocyanine, anatase, and barite. (b) Raman spectra of blue (top) and red (bottom) areas from Inv. 454, obtained with a portable system; relevant bands marked in the top spectrum are assigned to anatase and barite, while signals in the bottom spectrum are due to minium and gypsum.

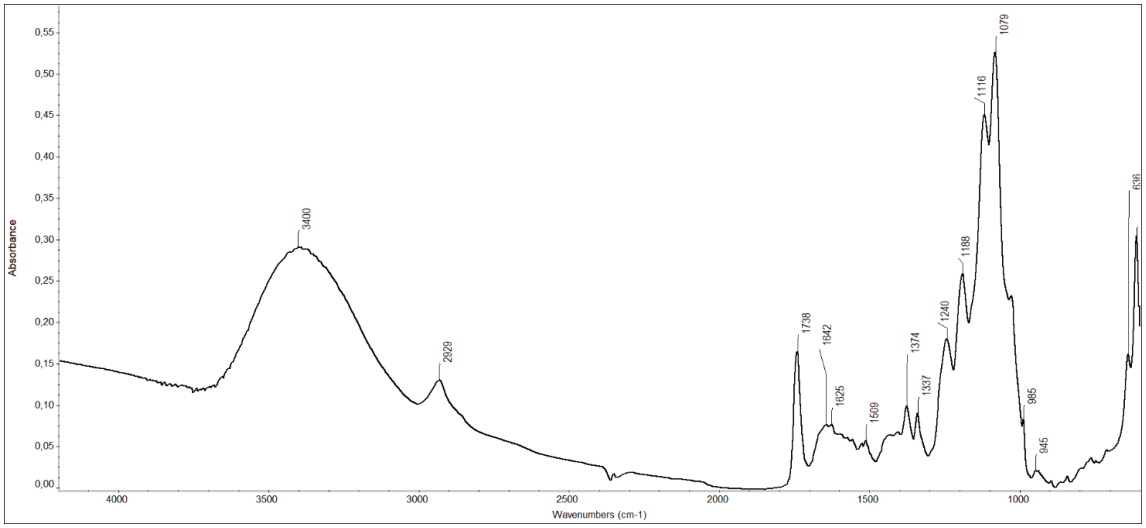
(a)


Absorbance
Wavenumbers (cm-1)
3392
2929
2854
1732
1600
1457
1398
1338
1185
1115
1078
1025
984
834
796
705
637

(b)


Absorbance
Wavenumbers (cm-1)
3695
3674
3620
3395
2927
2856
2515
1795
1737
1420
1242
1186
1118
1076
984
946
913
877
798
713
637

(c)


Absorbance
Wavenumbers (cm-1)
3400
2929
1738
1642
1625
1509
1374
1337
1240
1188
1116
1079
985
945
636

(d)

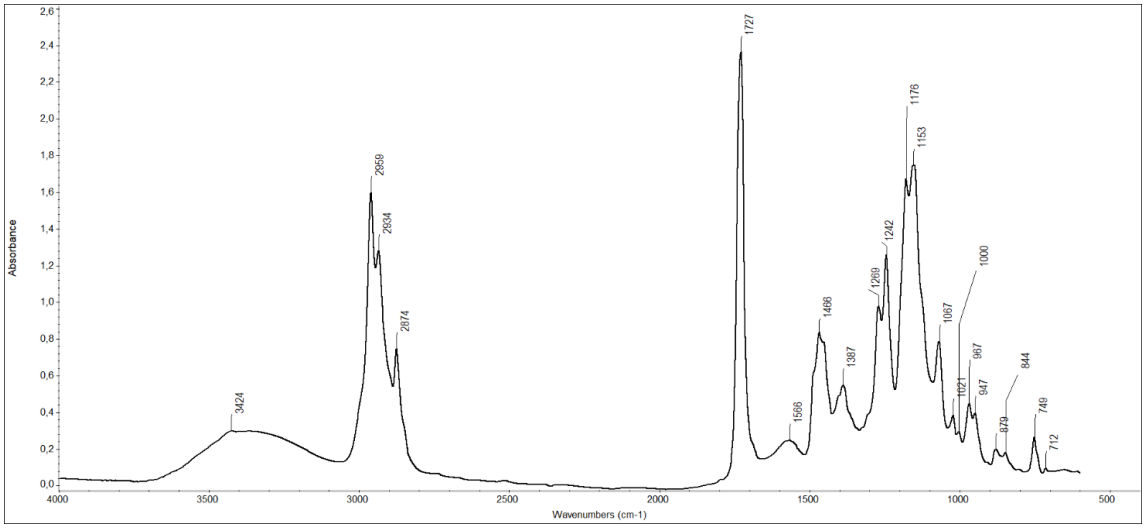


Figure S4 – Representative FTIR spectra. (a) Micro-ATR-FTIR spectrum of a white layer from Inv. 451, showing the presence of drying oil. (b) Micro-ATR-FTIR spectrum of a red layer from Inv. 449, showing the presence of polyvinyl acetate. (c) Micro-ATR-FTIR spectrum of a red layer from Inv. 452, showing the presence of an alkyd resin. (d) Micro-ATR-FTIR spectrum of a film-forming surface layer from Inv. 454, showing the presence of acrylics and an alkyd resin. Other components identified in these spectra include barite, calcite, talc, kaolinite and other silicates, zinc stearate, oxalates, and a synthetic organic pigment (possibly Pigment Red 4 or similar pigment).