

UV-excited fluorescence as a basis for the in-situ identification of natural binders in historical painting: a critical study on model samples - Supplementary Materials

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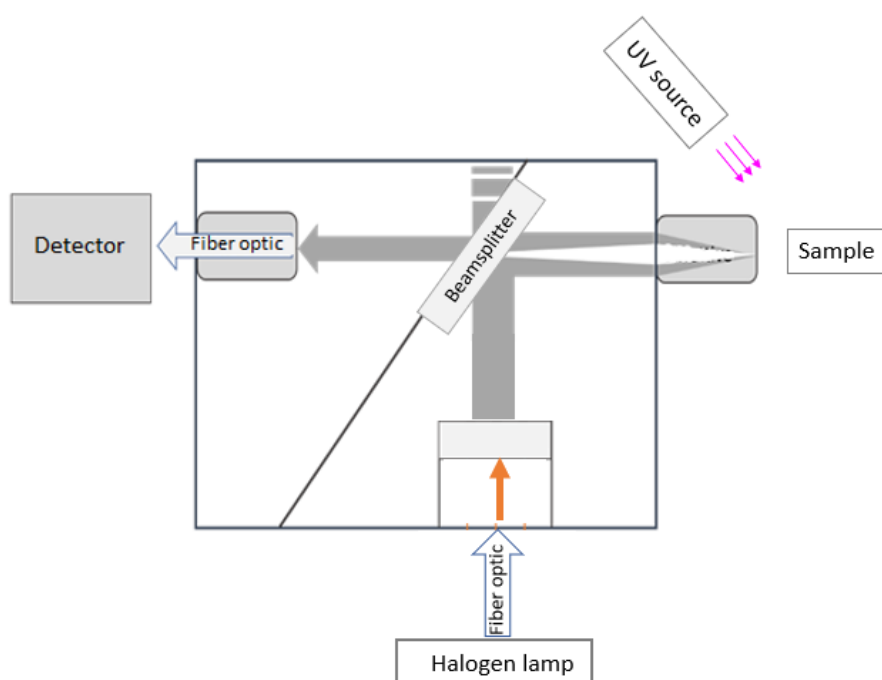


Figure S1. Schematic diagram of the portable spectrometer used for UV-excited fluorescence and visible reflectance measurements.

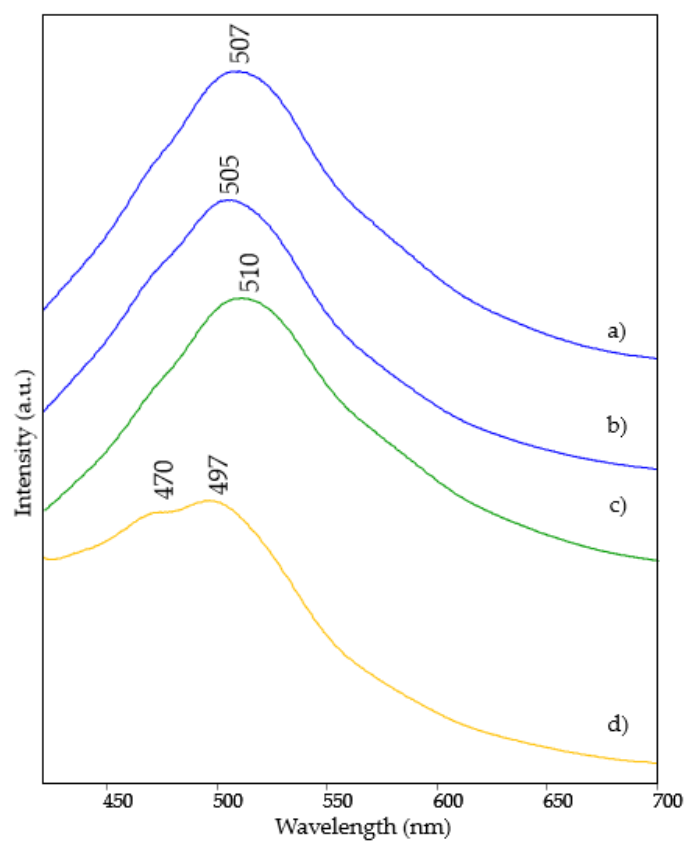


Figure S2. Emission spectra of pure binders: a) linseed oil, b) walnut oil, c) egg yolk, d) animal glue.

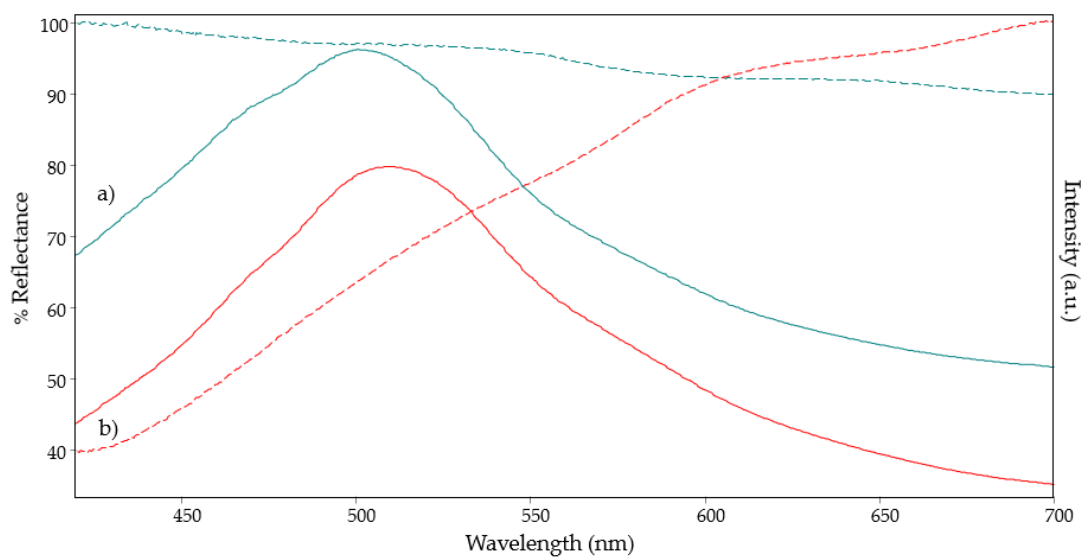


Figure S3. Comparison between the emission and the reflectance spectra of a) an egg tempera layer with lead white and of b) pure yolk.

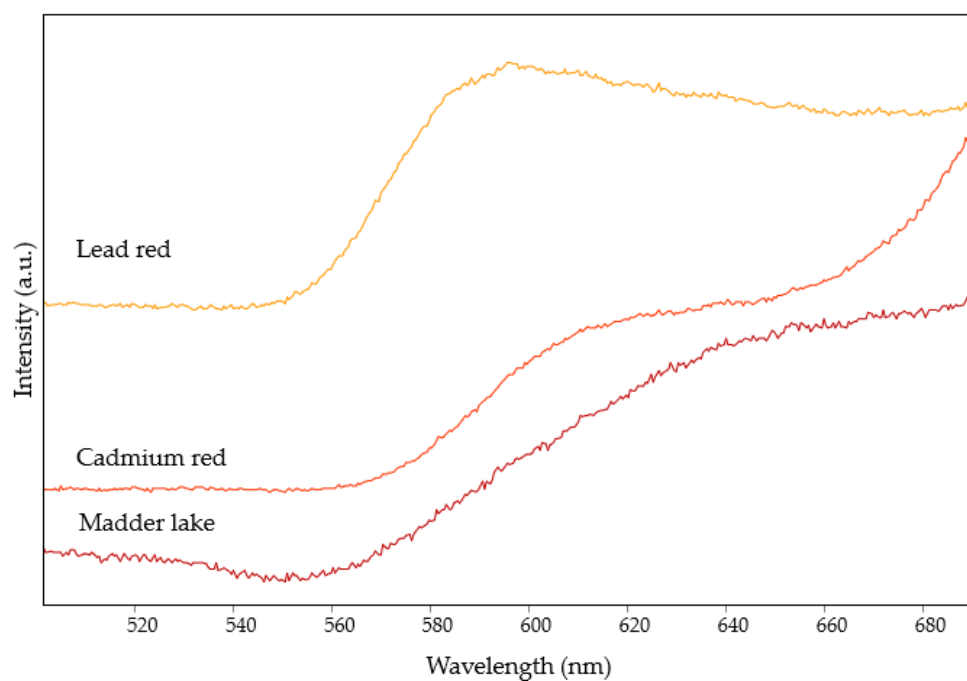


Figure S4. Emission spectra of fluorescent pigments used in the model pictorial layers examined.

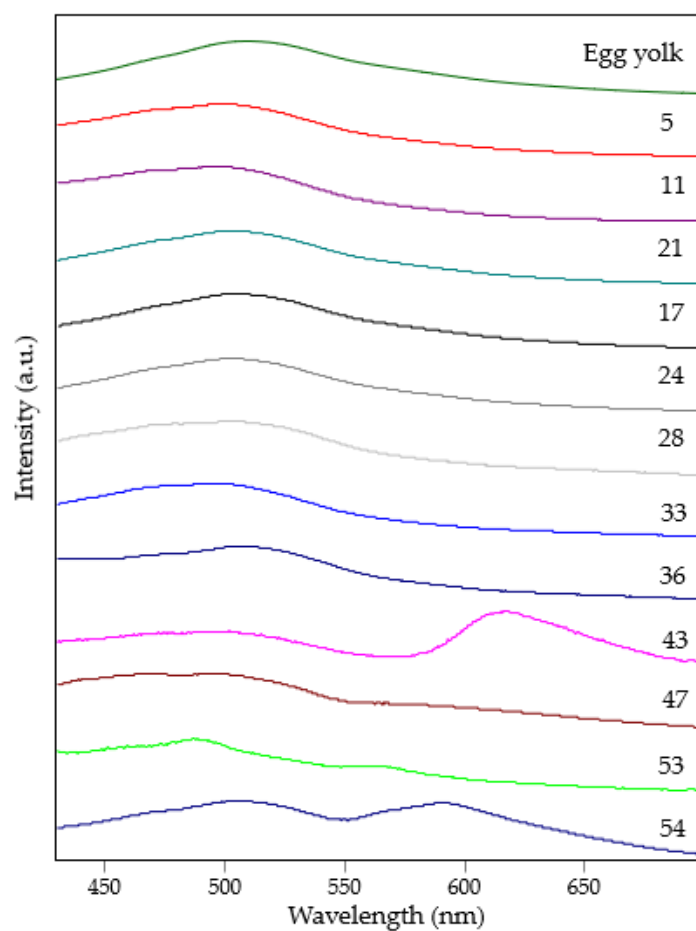


Figure S5. Normalized emission spectra of model samples of tempera painting with egg yolk. The spectra of the model samples containing pigments other than white were corrected for self-absorption.

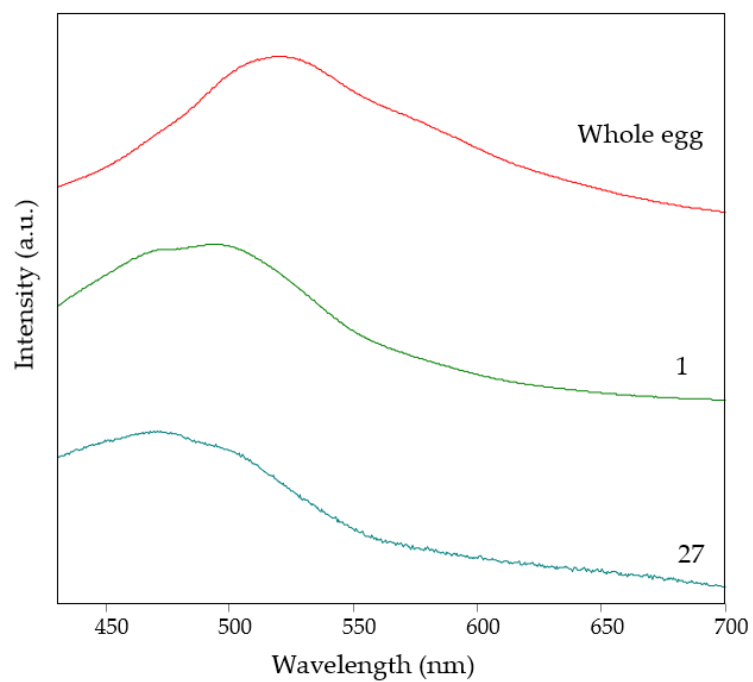


Figure S6. Normalized emission spectra of model samples of tempera painting with whole egg. The spectrum of the model sample containing ultramarine blue was corrected for self-absorption.

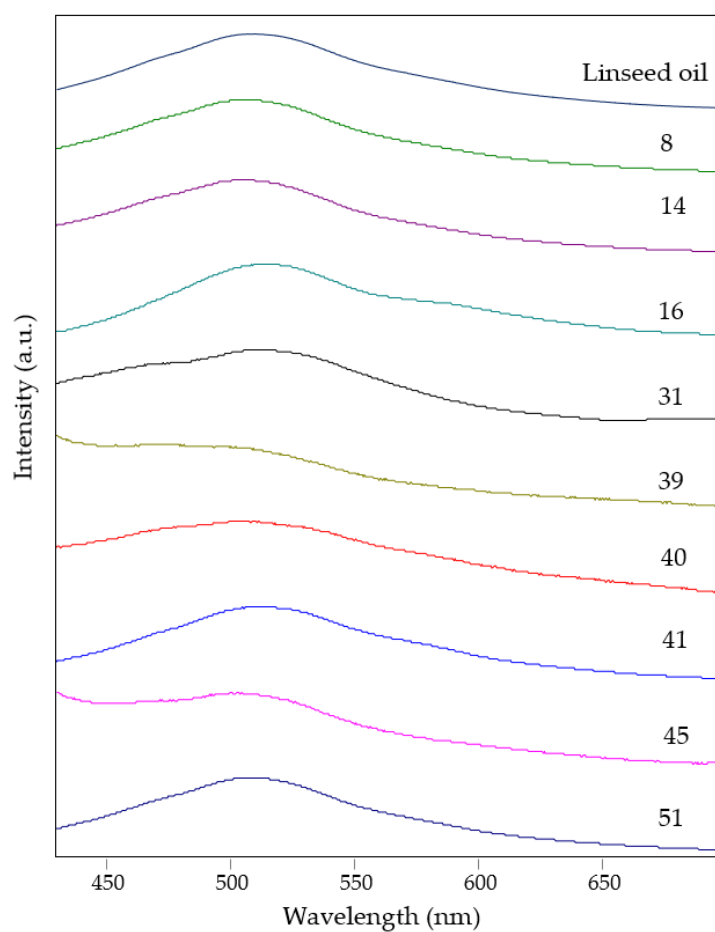


Figure S7. Normalized emission spectra of model painting samples with linseed oil as binder. The spectra of the model samples containing pigments other than white were corrected for self-absorption.

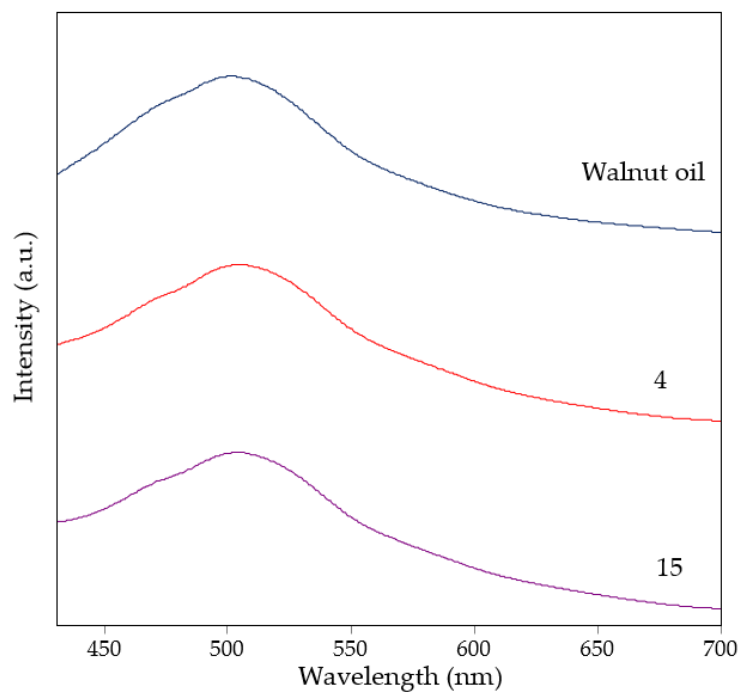


Figure S8. Normalized emission spectra of model painting samples of lead white with walnut oil as binder.

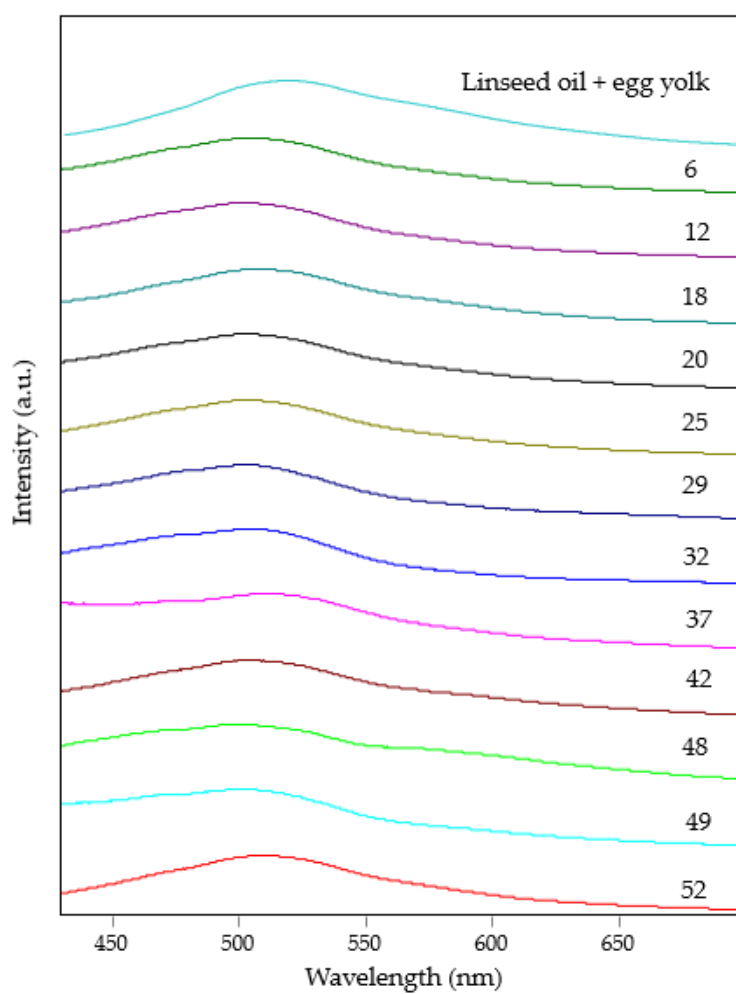


Figure S9. Normalized emission spectra of model samples of *tempera grassa* painting with linseed oil. The spectra of the model samples containing pigments other than white were corrected for self-absorption.

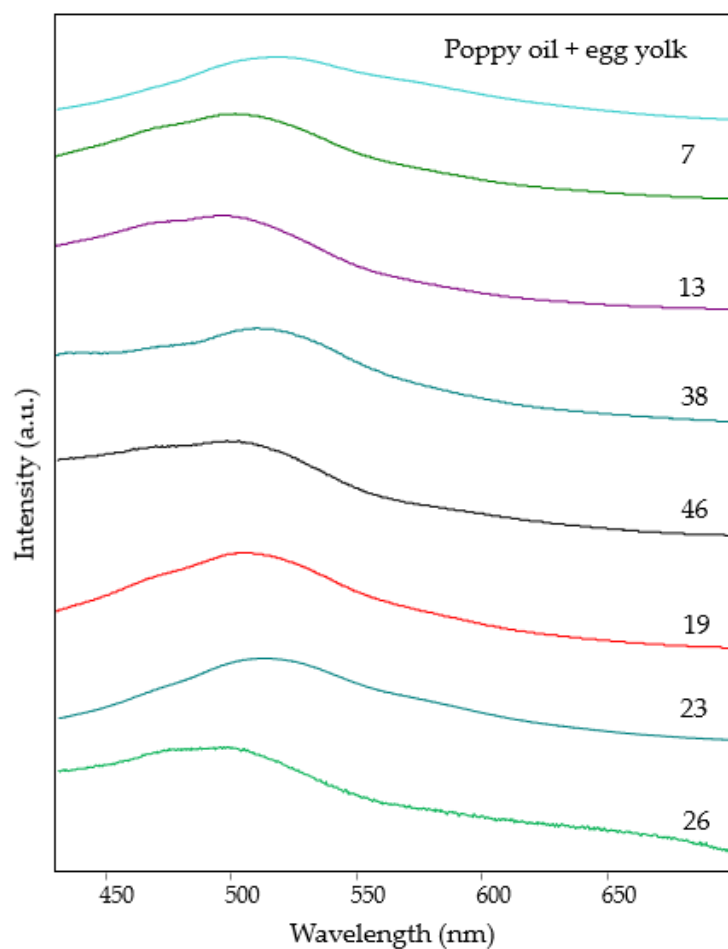


Figure S10. Normalized emission spectra of model samples of *tempera grassa* painting with walnut and poppy seed oil and of Doerner's *tempera* painting. The spectra of the model samples containing pigments other than white were corrected for self-absorption.

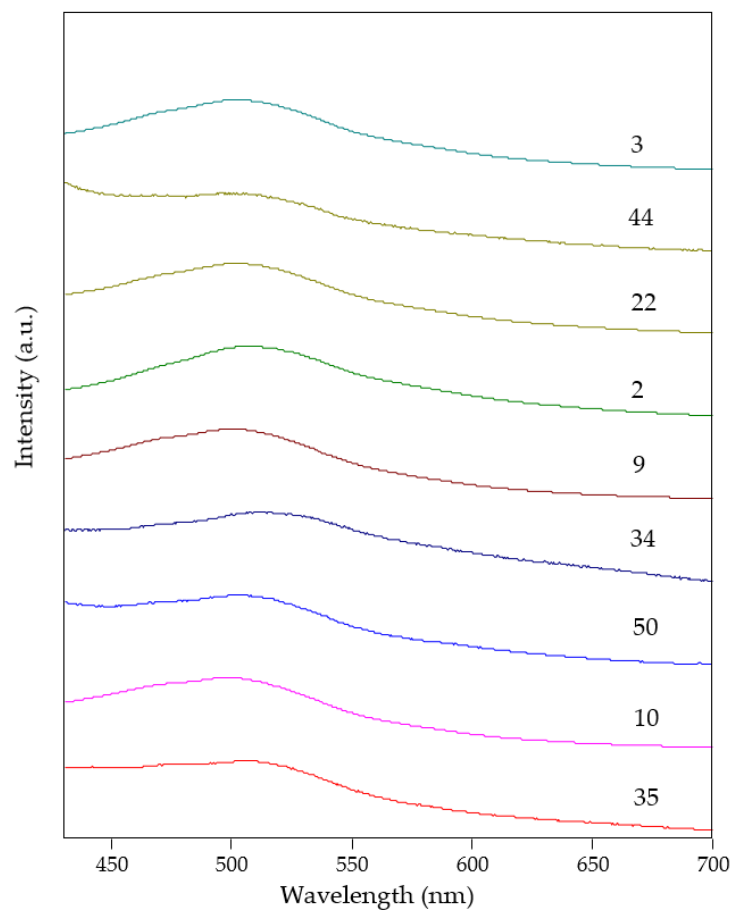


Figure S11. Normalized emission spectra of model samples of overlapped paint layers each containing egg or oil binder. The spectra of the model samples containing pigments other than white were corrected for self-absorption.

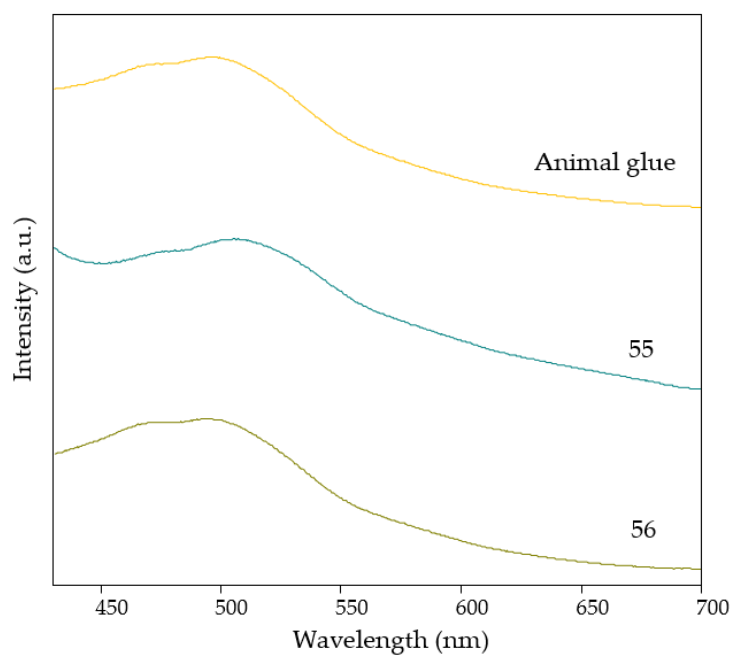


Figure S12: Normalized emission spectra of model painting samples of lead white with animal glue or milk as binder.

Table S1 Wavelengths of the emission maxima of the examined model pictorial layers (λ_{exc} 365 nm). Legend: sh = shoulder; P = pigment.

Sample n.	Emission maximum (nm)	Sample n.	Emission maximum (nm)
1	493	37	509
2	501	38	511
3	507	39	493
4	506	40	496
5	498	41	511, 575sh (P)
6	504	42	504, 580sh (P)
7	501	43	475sh, 501, 590 (P)
8	507	44	470sh, 501
9	472sh, 499	45	503
10	472sh, 498	46	470sh, 504
11	470sh, 496	47	468sh, 492, 570sh (P)
12	470sh, 501	48	470sh, 500, 570sh (P)
13	470sh, 496	49	470sh, 499
14	505	50	470sh, 501
15	501	51	506
16	507	52	510
17	475sh, 507	53	470sh, 500
18	507	54	506, 575 (P)
19	507		
20	470sh, 501		
21	475sh, 501		
22	501		
23	512		
24	475sh, 501		
25	501		
26	472sh, 496		
27	468, 496sh		
28	468 sh, 505		
29	501		
30	505		
31	512		
32	506		
33	472sh, 496		
34	514		
35	506		
36	475sh, 507		