



Comments and Suggestions for Authors (Reviewer 1)

We thank the reviewer for the comments and feedback on our manuscript. In the following, the answers point by point to the comments are reported.

Comment 1. lines 92 - 107 should be a part of materials and methods as you have described the materials chosen for the analysis

Response comment 1

Lines 92 - 107 are moved in 'Materials and Methods' section and the text was revised accordingly.

Comment 2. lines 132 - 141: which FTIR method was used, KBr or ATR, please add.

Response comment 2

The device is a Nicolet™ FTIR Thermo Scientific™ equipped with a ConservatIR™ FTIR External Reflection Accessory. We add this information in the manuscript.

Comment 3. line 165: what does it stand "gum bichromate"? Are the photographs made by that process or? Please add better description. The same goes for other sections.

Response comment 3

We confirm that the gum bichromate is one of the photographic processes used for these photographs. We provided a more detailed description in the revised sections (please see 188-198 lines).

Comment 4. line 167: which type of light, UV or else?

Response comment 4

Sunlight is the source but only the UV is the active component. We revised the text for clarity about the photographic process.

Comment 5. lines 166 -172: what proportion/ ratio of the used materials? Is it known?

Response comment 5.

As cited from reference (Vila, A.; S. A. Centeno; L. Barro; N. W. Kennedy. Understanding the gum dichromate process in pictorialism photographs: A literature review and technical study. Studies in conservation 2013, 176-188), printing process are generally described with indications about the proportions of the reagents, suggested exposure time and the hardening of the bichromate gum are reported. Exposure times depend on many variables: the amount of colloid, the type of coating, and all the unpredictability due to the artisanal nature of the process. Another variable is the distance from the UV lamp, which is more manageable or controllable. Therefore, the reagents proportion in the Vanni photographs are unknown because the procedure is entirely artisanal.

Comment 6. line 180: such abbreviations should be previously described (FFPV_0063). The same goes for other abbreviations.

Response comment 6

The text now states the meaning of the inventory code. Please see lines 108-109.

Comment 7. Figure 1 shows very large number of colored lines, what do they mean?

Response comment 7.

As described in the figure's caption, it represents 113 spectra from 113 measurement points appropriately chosen for the group of photographs carried out by gum bichromate process.

Comment 8. Table 1 should be written in unique form (functional group) somewhere is written bichromate, somewhere C-O. The same goes for other FTIR tables.

Response comment 8.

We revised the text accordingly. All tables are now consistent.

Comment 9. Figure 3 is not readable due to overlapping of multiple spectra. should be improved. The same goes for other FTIR figures

Response comment 9.

We thank the reviewer for the comment. The number of spectra is very large, and it was chosen to make one of them stand out (from the others in transparency). The overlapping problem in this case must stand out because one of the aims of the work is precisely to highlight spectroscopic problems such as small differences. The added value of the ML algorithms is to discriminate small differences even when there is an overlapping problem of signals.

However, the resolution of all images was increased to improve the figures (1200 dpi) and most of the images have been redone.

With best regards,

Claudia Scatigno - on behalf of all the authors.

