Discovering the evolution of Jacques-Louis David's portrait of Antoine-Laurent and Marie-Anne Pierrette Paulze Lavoisier

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Supplementary information

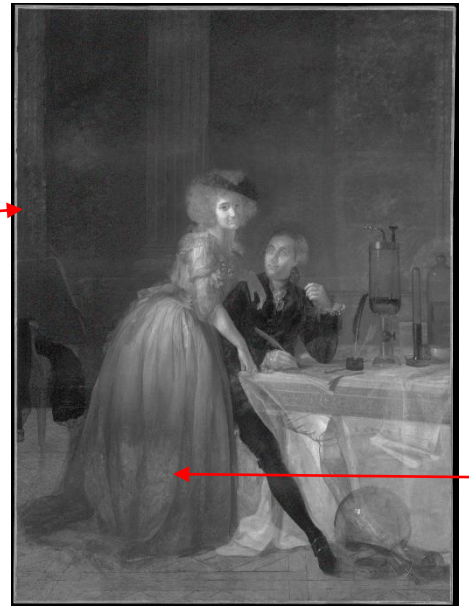
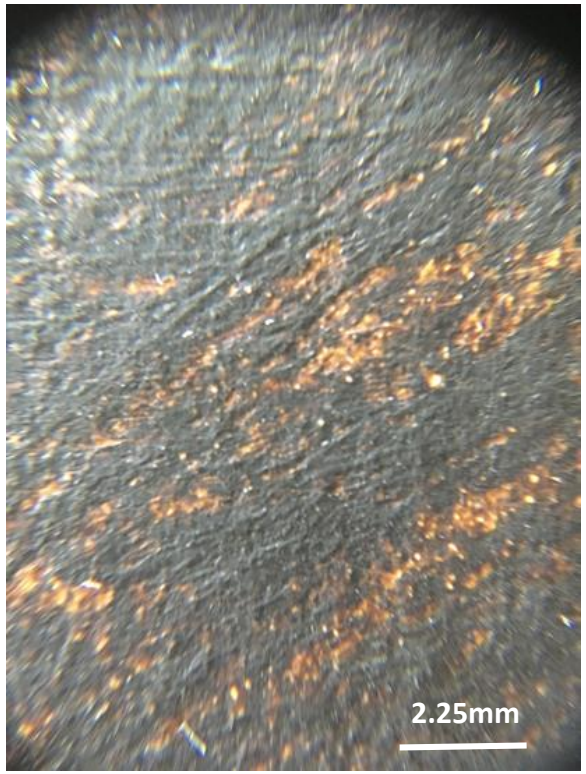
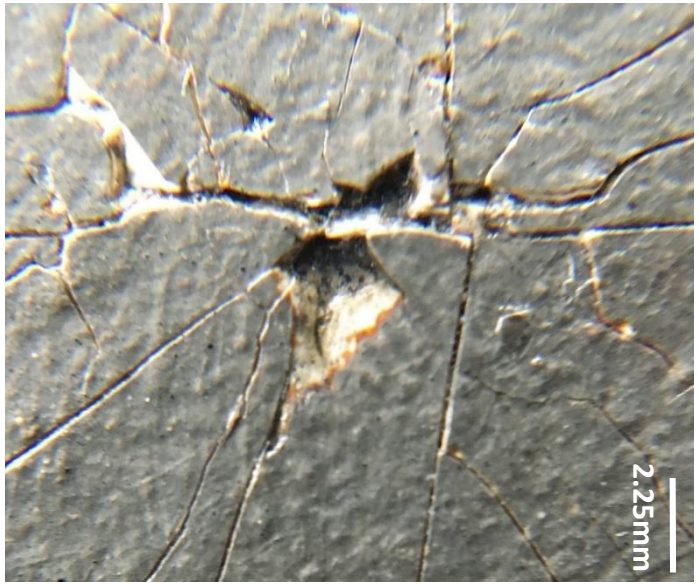


Fig. S1. Details of the infrared reflectogram (IRR) showing the *frottis* – thin, rapid smearing of the reddish-brown paint used to tone down the white ground preparation. In the detail to the left, the vertical stripes are the flutes from the column in the background of the painting.



A

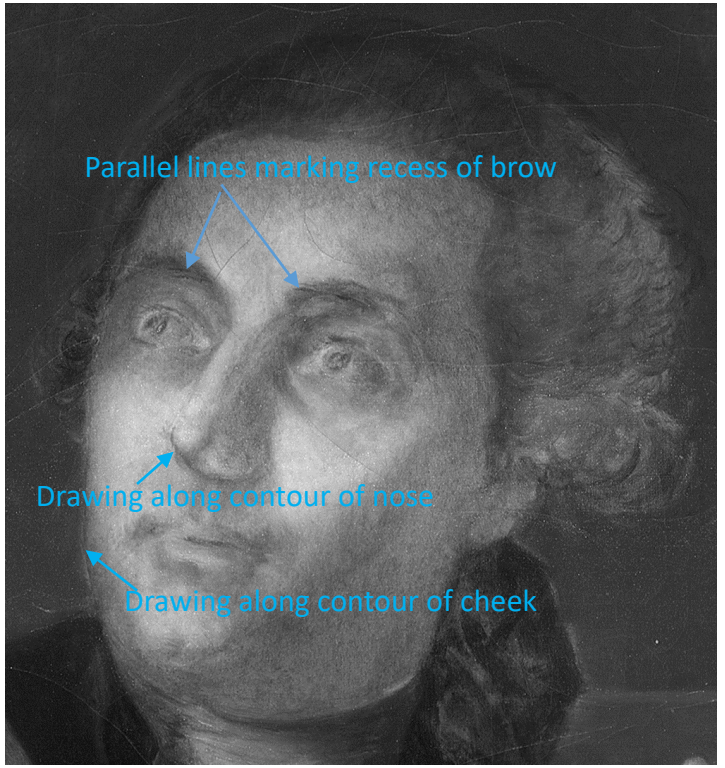


B

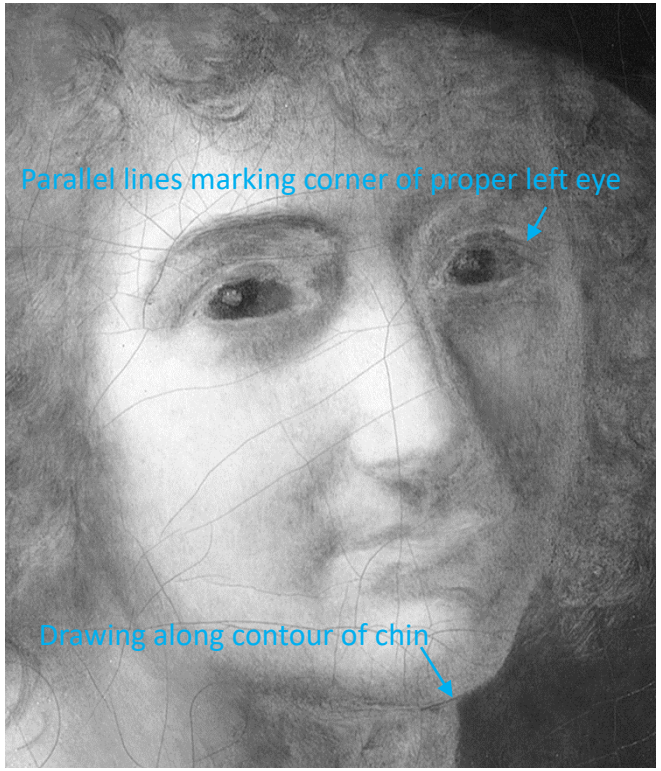
C

Fig. S2. A. Photomicrograph of the surface of the painting showing the reddish-brown toning (*frottis*) of the white ground preparation beneath the grey upper paint layer, original magnification 24x. **B.** Photomicrograph of a loss in the surface at top right, in an area where the bookshelf is painted beneath the grey background, showing reddish-brown paint on top of the thick white ground preparation, original magnification 24x. The blue arrows in **C** indicate the locations where the photomicrographs **A** and **B** were taken.

A



B



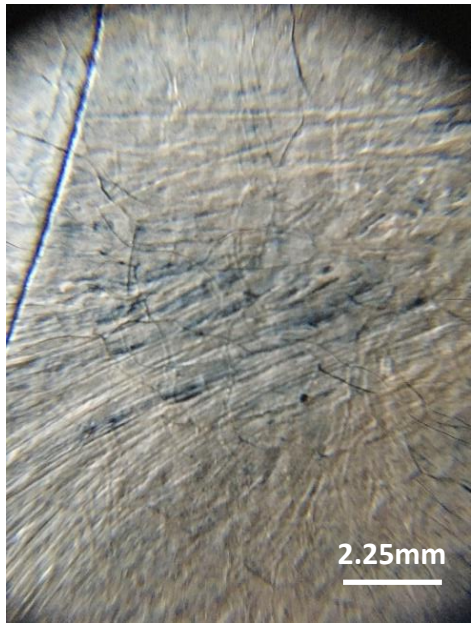
C

Fig. S3. Details of the IRR showing adjustments to the contours of the hands and positions of the fingers with red arrows (**A**), and to the facial features (**B** and **C**) with blue arrows.

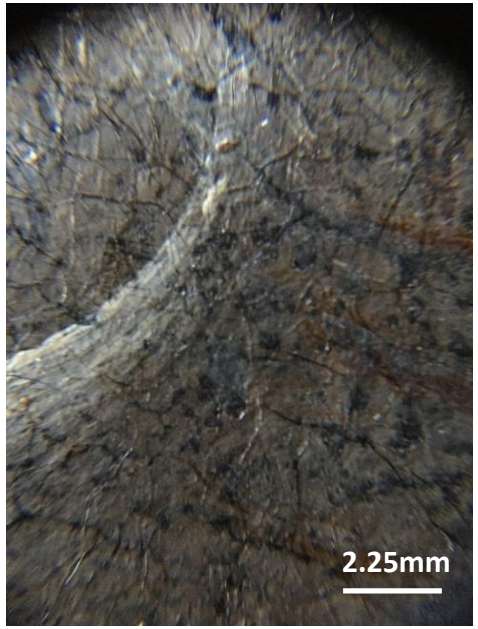
Fig. S4. IRR indicating features in the first composition discussed in the main text: desk decoration, sheets of paper unfurling on the desk edge, and wicker wastepaper basket. The blue arrows indicate the dark shape across Madame Lavoisier's hair, the yellow arrows the slightly dark passages surrounding the top of her head, the green arrows the changes to the positions of Lavoisier's legs, and the blue rectangle the indistinct rectangular shapes extending from the canvas's right edge.

Fig. S5. *Portrait of Antoine-Laurent and Marie-Anne Pierrette Paulze Lavoisier*, by Jacques-Louis David, showing the locations where the samples S1-S7 were taken.

C

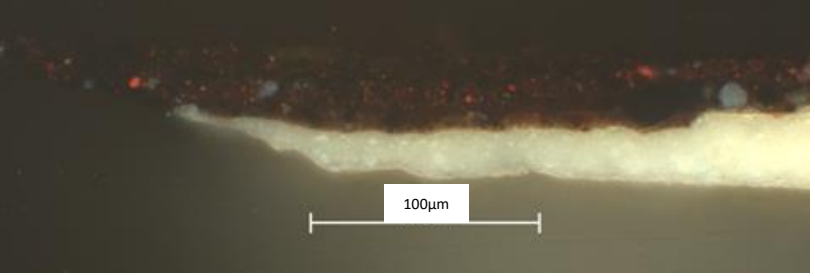


A

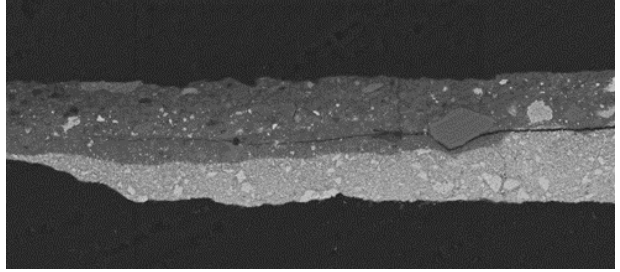


B

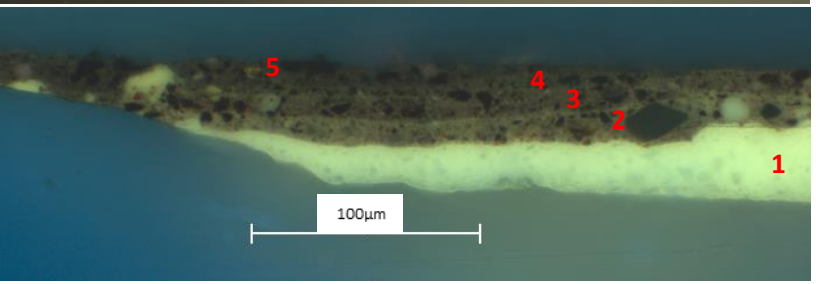
Fig. S6. **A and B**. Photomicrographs of areas in the black hat brim beneath Madame Lavoisier's hair, original magnification 24x. **C.** The blue arrow and blue square indicate the area where photomicrographs **A** and **B** were taken, and the green arrow shows the approximate location where photomicrograph **B** in **Fig.2** (main text) was taken.



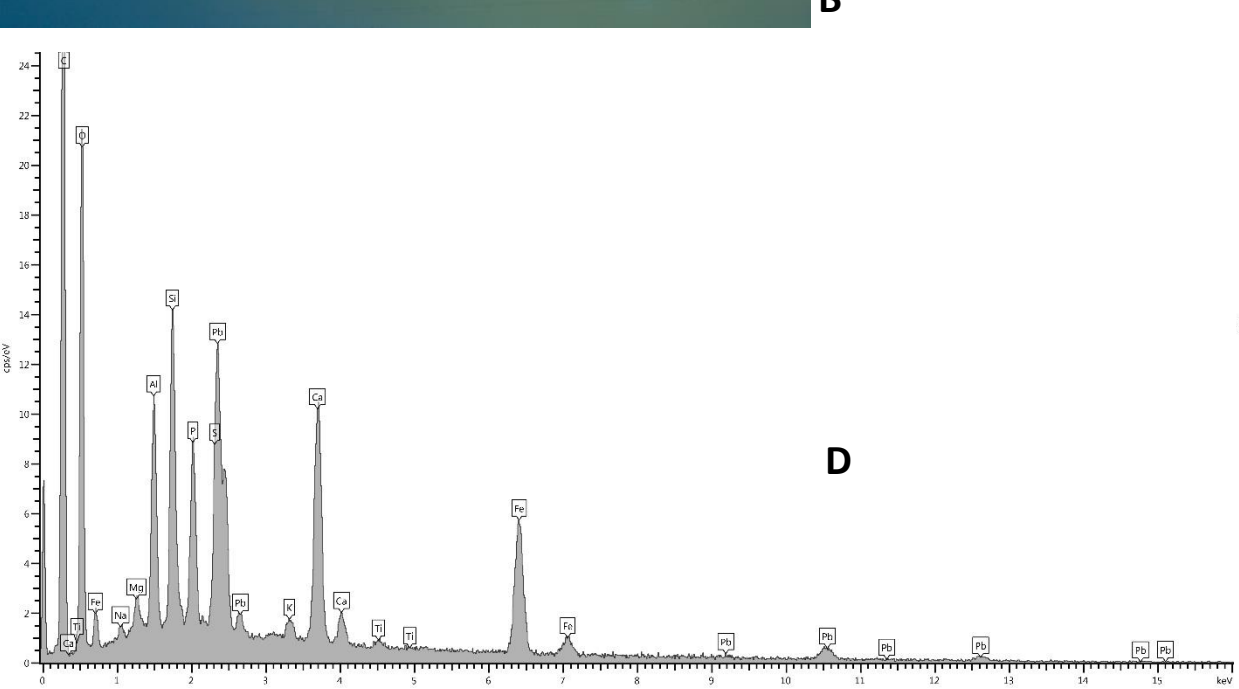
A



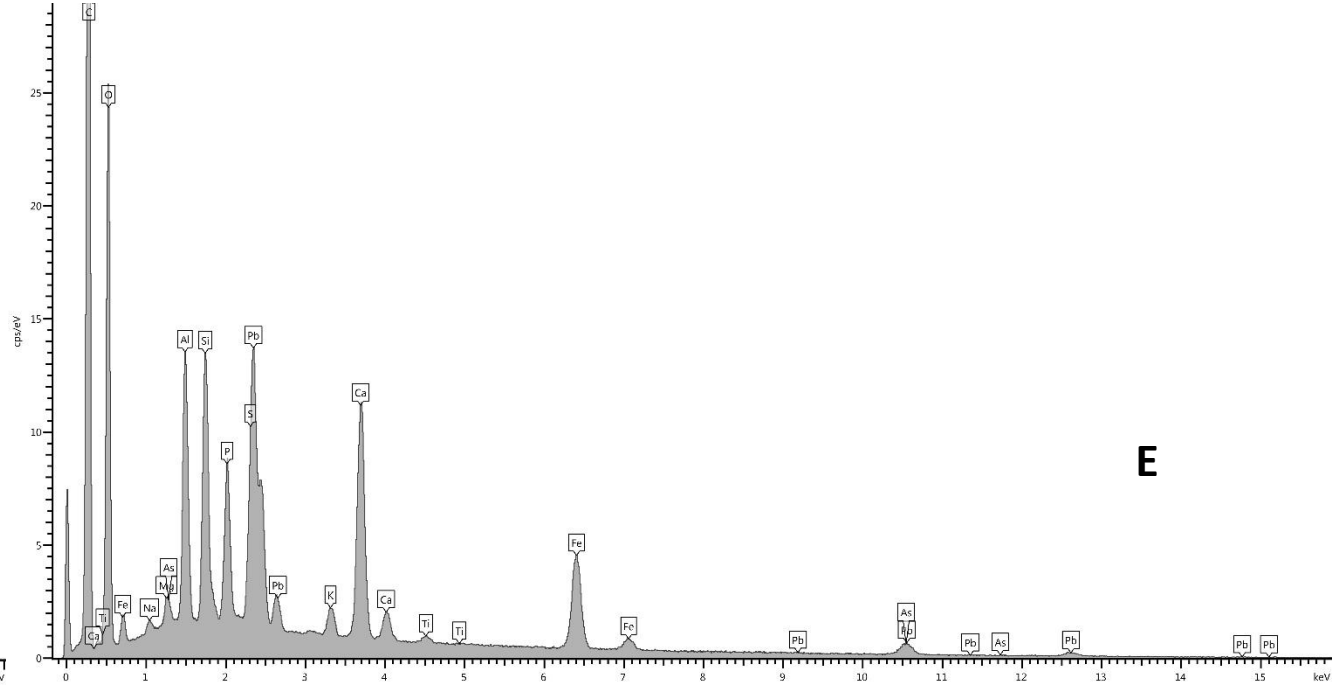
C



B



D



E

Fig. S7. A and B. Photomicrographs of **sample S3**, taken from Antoine Lavoisier's coat, photographed with visible and UV illumination, respectively, original magnification ×400. In **B**, layer #1 is the ground preparation, layers #2, #3, and #4 correspond to Lavoisier's brown coat in the first composition; and layer #5 to the black coat; **C.** SEM-BSE image of sample S3, x400. **D**. EDS spectrum acquired in layer # 5 in sample S3. **E**. EDS spectrum acquired in the top layer of **sample S4** (layer #4 in Fig. 5E, main text), corresponding to Lavoisier's black coat.

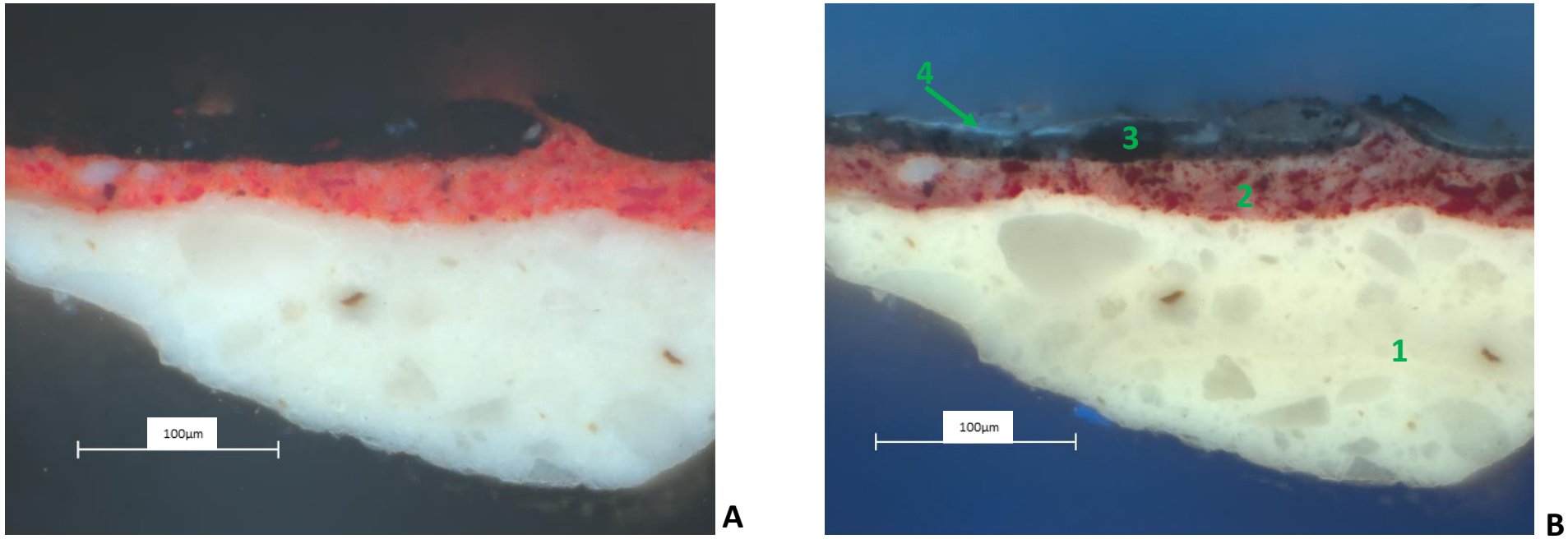
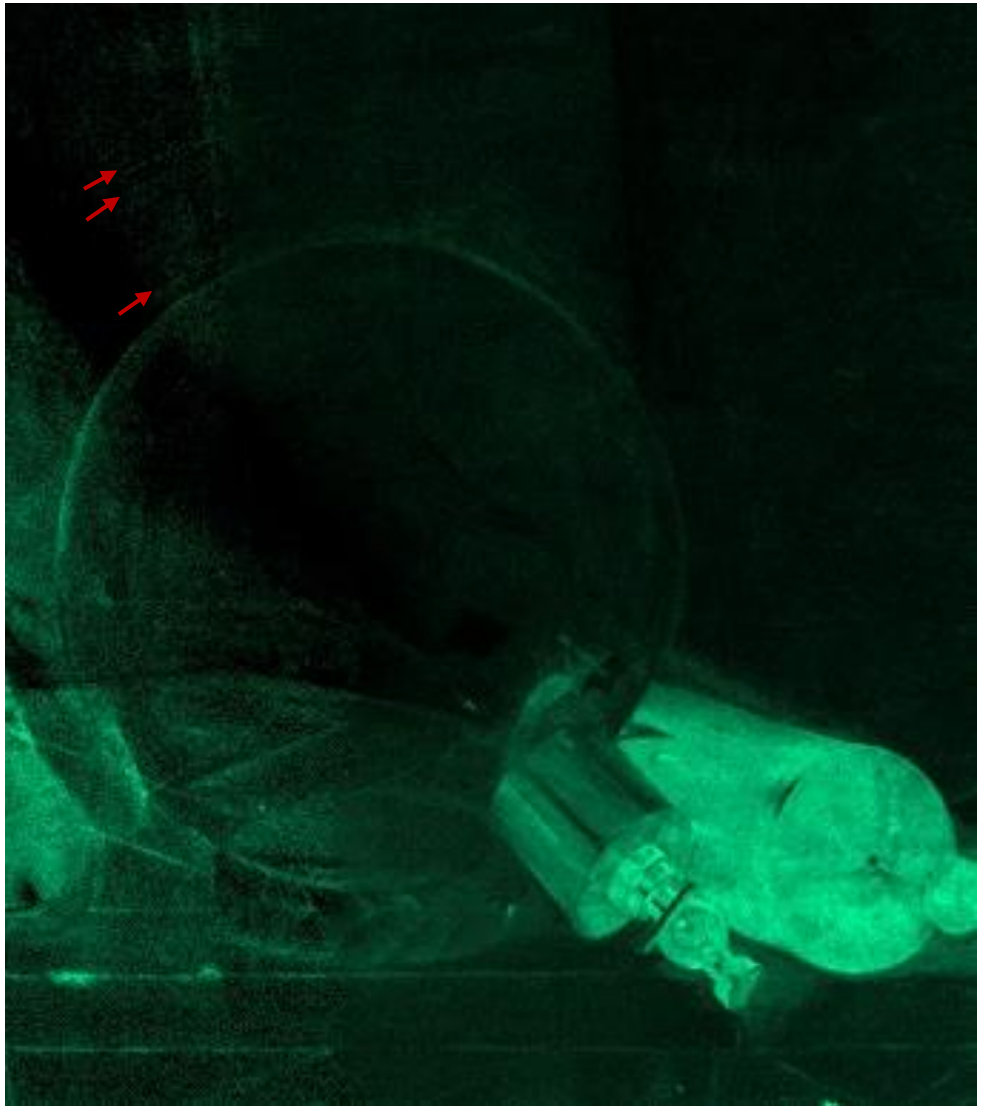


Fig. S8. Sample S7, taken from Antoine Lavoisier's coat in an area where paint from the red mantle in the hidden composition is visible in the Hg distribution map, photographed with visible (**A**) and UV illumination (**B**), original magnification ×400. In **B**, layer#1 is the ground, layer #2 corresponds to the red mantle in the first composition, the black layer #3 to the coat visible in the present version, and #4 to an organic layer, possibly a varnish. The location where this sample was taken is indicated in Fig. S5, in this Supplementary information file.

A



B

Fig. S9. A. The blue rectangle indicates the location of the Ca distribution map detail shown in Figure 6B. **B**. Detail of the Ca distribution map where red arrows indicate the locations of the concentric circles as J.-L. David tried out different scales for the glass balloon in the foreground.