

OBJECT RESEARCH



Alfred Stieglitz (American, 1864–1946)

Georgia Engelhard

1920

Palladium print

Alfred Stieglitz Collection

AIC accession number: 1949.716

Stieglitz Estate number: 55A

Inscriptions: Inscribed recto, on hinged mat, lower left, in graphite: "Treated by Steichen 2/1950"; inscribed verso, upper left, in graphite: "BS"; verso, upper right, in graphite: "H"; verso, left center, in graphite: "1 [or 'I']"; verso, center, in graphite: "W / white"; verso, lower center, in graphite: "Ch / 55A"; verso, lower center, in graphite: "-----"; verso, lower right, in graphite: "X"

Dimensions: 23.7 x 19.3 cm (image); 25.3 x 20.2 cm (paper); 54.9 x 44.5 cm (hinged mat)

Print thickness: 0.300 mm

Mount: Original; with original presentation window mat

X-ray fluorescence (XRF) spectrometry:
See below

Fourier transform infrared (FTIR) spectroscopy:
See below

X-RAY FLUORESCENCE (XRF) SPECTROMETRY

XRF spectral readings were taken from the recto of the work and from the mount when available. The elements listed below have been positively identified in the work; elements in bold have been attributed to the processing of the print.

Print: **Fe, Pd**

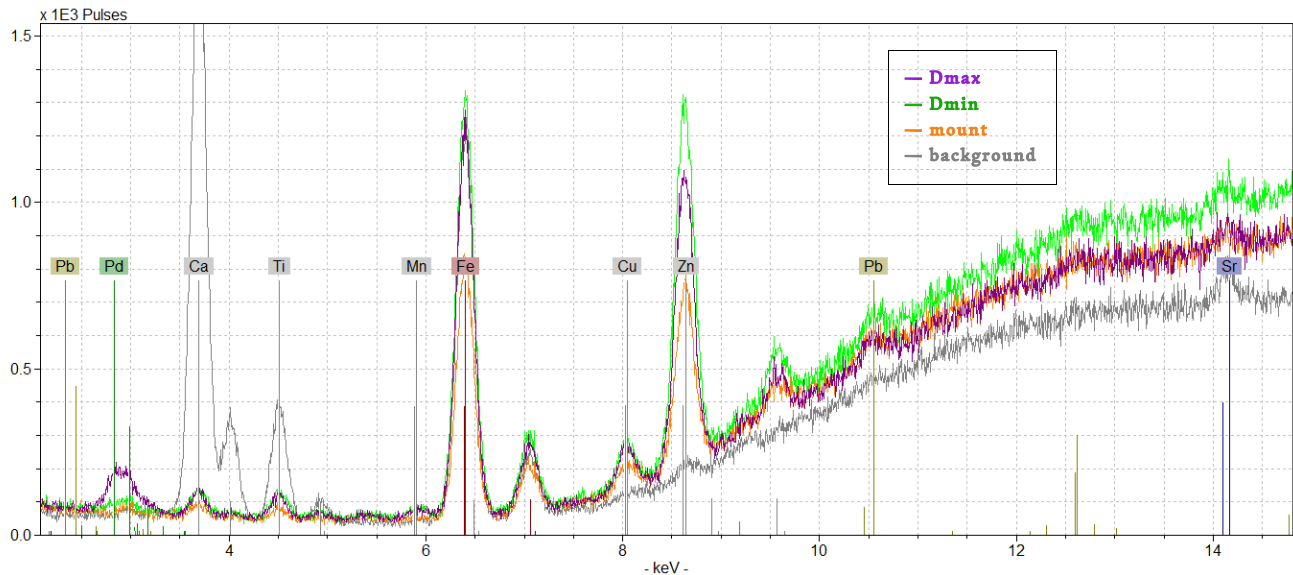
Mount: Ca, Ti, Mn, Fe, Cu, Zn, Sr, Pb

The graph below shows XRF spectra for three distinct measurement areas on the print: the darkest, maximum-density image area (Dmax, purple); the lightest, minimum-density image area (Dmin, green); and the mount, when available (orange). The background spectrum (gray) represents the characteristic contribution of the instrument itself as measured on a Teflon reference and is included in order to discount irrelevant elements from the print's signature. Elements were identified based on the presence of their characteristic peaks. Analysis was performed with a Bruker ARTAX air-path portable micro-XRF system equipped with a laser pointer, an integrated camera system, a Mo 12.5µm filter, and a Mo tube. Measurements were taken for 250 LT at 50 kV and 800 µA. The spectrum below illustrates the significant peaks for this print in the energy range from 3 to 15 keV.

Figure 1. (right)
Locations of XRF measurements



Figure 2. (below)
XRF spectra from the Dmax, Dmin, mount, and background signal produced by the analyzer.



FOURIER TRANSFORM INFRARED (FTIR) SPECTROSCOPY

A small sample was removed at the bottom center edge of the paper, inclusive of some paper fibers and upper layers of material. FTIR analysis identified protein (probably related to the sizing of the paper fibers) and a thin layer of wax coating.

Analysis was performed using a Bruker tensor 27 FTIR spectrophotometer with mid-IR glowbar source coupled to Hyperion 2000 Automated FTIR microscope with nitrogen cooled MCT detector (covering the range 4,000- 450 cm^{-1}). Samples were analyzed in transmission through the microscope after compression in a diamond microcompression cell, at a resolution of 4 cm^{-1} .

Figure 1. (right)
Locations of sampling for FTIR measurements



Figure 2. (below)
FTIR spectra of two areas of the sample: one only showing protein spectral bands and weak peaks for wax (gray trace), and one also including significant contributions from the bands related to cellulose fibers (black trace)

