

CONFOCAL X-RAY FLUORESCENCE OF PAINTINGS: DECONSTRUCTING AN ATYPICAL 17TH C. COLLABORATION FROM ANTWERP, ASSESSING A 14TH C. CATALONIAN PANEL, AND IMAGING A LOST N.C. WYETH

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The 17th c. Flemish painting on panel, *The Armorer's Shop*, has long been attributed to David Teniers the Younger (1610-1690). During dendrochronological examination of the painting, a portion of one oak plank in the overall structure was found to have been carved out so that a smaller plank, depicting a pile of parade armor, could be inserted into the resulting depression. This unusual construction, combined with the identification of several paintings by Jan Brueghel the Younger (1601-1678) depicting this same parade armor, raised questions about the attribution and chronology of construction of the painting. Confocal x-ray fluorescence microscopy (CXRF) revealed the composition and location of buried paint layers by combining depth scans to produce virtual cross-sections over 20 mm in length. The relationship of the paint layers at the interfaces provided evidence for the armor panel having been painted separately and prior to the rest of the composition. This data provided a chronology of construction for the painting that supports a Brueghel attribution.

A late 14th c. Catalonian painting on panel depicting St. Louis of Toulouse was examined by conventional and confocal XRF, cross-section microscopy, and Raman spectroscopy to characterize the materials used in the manufacture and restoration this work. The panel is thought to have been part of an altarpiece with extant panels at the Philadelphia Museum of Art and the Johnson Art Museum of Cornell University. Materials identified are consistent with those observed in other late medieval Catalonian paintings on panel, and with a late nineteenth-century restoration campaign.

X-radiography of N. C. Wyeth's family mural study (c. 1922-1924) revealed the presence of a second painting underneath the presentation surface. This painting has been identified as an illustration for a 1919 *Everybody's Magazine* story entitled "The Mildest-Mannered Man", a painting previously thought to have been lost. Confocal x-ray fluorescence microscopy (CXRF) was chosen to non-destructively probe the composition of the buried paint layers.