

Raman characterization of pigments in painted beams and a wall painting discovered in the San Francisco church in Santiago, Chile

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A material characterization of two artworks discovered in the San Francisco Church, Santiago, Chile, was performed using micro-Raman spectroscopy. Structural painted beams and a wall painting that belong to the same time period, between the end of the 17th and 19th centuries, were analyzed. The cross-section samples of both artworks were characterized and animal protein was identified in the ground layer in both cases. The supporting material of the beams was identified as cypress wood, and a rag paper layer was used as a base for the paint layer, which is composed mainly of a white ground layer on which the color was subsequently added; the yellow pigments are orpiment and chrome yellow; the green color probably arises from a mixture of orpiment, red lead, ultramarine blue, and calcite. A complete analysis of the materials using complementary techniques such as microchemistry and optical microscopy indicates that the mural was painted using a mixed technique and that organic and inorg